Archaeological Inventory of the Martinez Vegetation Management Project, High Rolls, New Mexico, Lincoln National Forest

Cultural Resource Survey

2004-08-047

Sacramento Ranger District
Lincoln National Forest
United States Department of Agriculture
Otero County, New Mexico

FINAL

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Abstract and Management Summary

Archaeological Inventory Survey was conducted on 100% of 1,766 acres of the Martinez Vegetation Management Project area located southwest of High Rolls, New Mexico, in the Sacramento Ranger District of the Lincoln National Forest. The proposed undertaking will consist of forest thinning, piling and burning slash, wood harvesting, and prescribed burning. Mechanical treatment will be conducted to thin trees to a density of four trees per acre in selected stands. The inventory survey was conducted in compliance with the provisions of the National Historic Preservation Act of 1966, as amended. The project resulted in the discovery and documentation of one previously recorded archaeological site, the Tinkler Site (AR-03-08-02-268) and 71 newly recorded archaeological sites. In addition, 195 isolated occurrences were found and recorded. All sites in the project area, except LA144830 (02-682), LA144837 (02-694), LA144785 (02-721), LA144791 (02-752), and LA144784 (02-757) are recommended as eligible for listing on the National Register of Historic Places under Criterion D pursuant to Section 106 of the National Historic Preservation Act, 1966, as amended.

Location and General Description of Project Area

The Martinez Vegetation Management Project area consists of 1,766 acres of piñon-juniper-oak woodland on the western slopes of the Sacramento Mountains. The project area is a large block of land bounded on the west by the steep escarpment above the Tularosa Basin, on the north by U.S. Highway 82, on the east by New Mexico Highway 82 (and private lands), and the West Side Road, near High Rolls, New Mexico. The project area is situated in T16S R11E Sections 6-8, 17, and 18 on the High Rolls 7.5' USGS topographic contour map. Elevation ranges from 6,500 to 7,000 feet above mean sea level (amsl). The terrain on these lower slopes of the limestone, block-faulted Sacramento Mountains consists of broad interfluvial ridges dissected by steep drainages. Rock shelters formed below the steep escarpment and have become sites of long-term settlement in the region. The High Rolls and the Fresnal Rock Shelters have been the sites for considerable archaeological investigations of their deposits. The sites demonstrate the potential for discovery of prehistoric materials from Paleoindian to late Puebloan. Protohistoric settlement by Mescalero Apache in the vicinity has been documented as part of their widespread nomadic range as well as later, reservation bound residence. Historical period railroad, mining, and ranch sites that have been recorded in the general project area demonstrate considerable alteration of the region in the late 19th century by Anglo-European expansion westward.

Natural Setting

The mid-elevation setting of the Martinez Vegetation Management Project area, ranging from 6,500 to 7,000 feet amsl, provided resources unique among those in the

region (Figure 1). Abundant game was no doubt available in the piñon-juniper-oak woodland, where ecotonal edges enhanced the productivity of the zone. Woodland products included piñon mast, but also, significantly, agave and sotol. These succulents were harvested for their corms that were roasted in pits that often expanded into multi-use ovens leaving considerable accumulated debris. The piñon-juniper-oak woodland is at the upper elevational limit for abundant succulent populations, but nonetheless provided a locality where it could be conveniently gathered and roasted. Proximity to escarpment rock shelters such as the Fresnal Shelter provided localities for settlement but also for ritual practice. The sedimentary terrain has an abundance of cherts that provided excellent material for stone tool-making. The woodland terrain is midway between the desert grassland floor of the Tularosa Basin and high mountain mixed conifer landscapes of the Sacramento ridgeline. Vectors of transit along live streams such as in Fresnal Canyon provided access to resources throughout the region; this area above the Fresnal Shelter provided excellent terrain for short term settlement, harvesting of succulents and wild game, and for vistas across the Tularosa Basin.

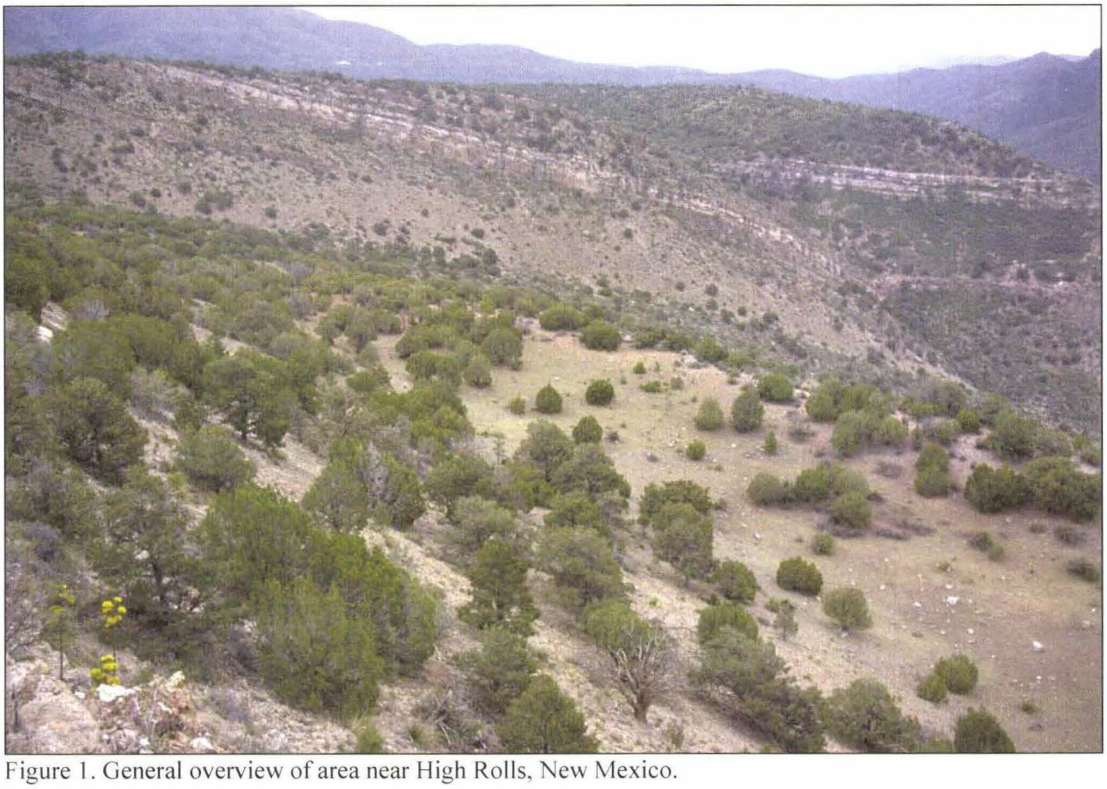

Figure 1. General overview of area near High Rolls, New Mexico.

Cultural Setting

Donald J. Lehmer described the cultural history of southern New Mexico as the Jornada Mogollon, following the toponyms for the Jornada del Muerto and the Mogollon Mountains (1948). The arid Jornada del Muerto in south-central New Mexico was so named because, outside of the Rio Grande, or Rio Bravo del Norte that flowed through the region, there were few obvious water sources to support early Spanish travel through the area. The Mogollon Mountains to the west were named after an early Spanish governor of the region. The Jornada Mogollones were described as a desert semi-sedentary people, adapting to the arid conditions and the elevational diversity of the landscape. They had lived in the region, according to Lehmer, since early pithouse settlement times, 2,000 years before present (ybp). Kelley (1984) described the Puebloan

period settlement of the region. MacNeish later expanded the chronology of Paleoindian and Archaic chronology, proposing occupation as early as 38.000 ybp (2004).

Paleoindian Period

Lithic artifacts found in the area suggest that early occupations in the region date to the late Pleistocene/early Holocene between approximately 10,000 and 6,000 B.C. MacNeish's (2004) work at Pendejo Cave, however, suggests evidence of earlier occupations. Diagnostic point types of later and better documented periods found in the Tularosa Basin region such as Clovis, Folsom, Scottsbluff, and Plainview (all firmly dated from other regional contexts) provide strong support for late Pleistocene occupations. Unfortunately, natural processes have either buried or destroyed most archaeological evidence from this time period, and, therefore, relatively little is known about late Pleistocene lifeways in the region. Early dates, ca. 7,500 ybp, from lower deposits at Fresnal Shelter, indicate the potential for early Archaic or late Paleoindian settlement in the immediate vicinity of the present project area. Based on comparative evidence from archaeological sites of the same period in other areas, the general social and economic organization of Late Pleistocene populations appears to be characterized by small, mobile bands subsisting predominantly on large game supplemented with the utilization of wild plant resources (Cordell 1984).

Archaic Period

Evidence of increasing cultural complexity among the prehistoric inhabitants of the region is based on the excavations of relatively well-preserved, Archaic period cave sites dating to 6,000 – 2,300 B.C. in the mountain region (MacNeish 1989a, 1989b,

1991). Archaeologists have found evidence of basketry, bone and wood working, including the introduction of the atl-atl, which demonstrates an increase in technological complexity. Additionally, the recovery of possible digging sticks as well as groundstone, important in plant processing, combined with palynological evidence for increased reliance on plant products suggest that people in the area experimented with horticulture and plant domestication by the second of first millennium B.C.

MacNeish (1989a, 1989b, 1991) proposed that the Archaic period should be subdivided into four separate phases. The Gardner Springs phase (ca. 6,000 +/- 500 to 4,300 +/-300 B.C.) is characterized as a "simple scheduled seasonal-round settlement pattern organized around a few very small groups. In essence, these Archaic people were probably foragers engaged in hunting, animal collecting or trapping, and plant collecting" (MacNeish 1991:685). People lived mainly in small ephemeral camps on the desert floor or around the playas there, with a few living in mountain rock shelters such as Fresnal Shelter.

The Keystone phase (ca. 4,300 +/-300 to 2,500 +/-200 B.C.) is proposed as an outgrowth of the Gardner Spring phase, with a continuation of small, microband camps and task force sites, but with the notable addition of large pithouse sites such as the Keystone Dam Site along the Rio Grande. These sites appear to have been occupied during winter, but they may also have been bases for excursions into other microenvironments during the spring, summer, and fall. MacNeish notes that this period "reveals a subtle shift toward a more efficient desert foraging subsistence system as well as a possible exploitation of more desert plants from more ecozones" (MacNeish 1991:689). This may correspond to a shift in the Chihuahuan Desert fauna and flora.

The Fresnal phase (ca. 2,500 +/-200 to 900 +/-150 B.C.) is coeval with the introduction of early maize into the Southwest and reflects fundamental changes in prehistoric lifeways. There was a substantial increase in the number of sites including the substantially more and larger sites in the Rio Grande Valley and desert floor/playa areas. The phase is characterized by MacNeish (1991:691) as possibly having year-round occupations where the sites served as base camps for a radial rather than a calendar-round system. The early evidence of horticulture includes maize and squash but not beans, which are known to be essential for their complementary amino acids; however, in this low desert region along the Rio Grande, tornillo or mesquite seeds may have satisfied this need (Schroeder 1974).

Pithouse Settlement

During the Hueco phase (ca. 900 +/-150 B.C. to A.D. 200 +/-100) people lived in seasonal microband or task-force occupations, but with larger and probably more numerous pithouse sites that may have served as winter villages. The ephemeral sites include new site types such as rock-roasting pits which indicate harvest and preparation of leaf succulents. Faunal remains from sites indicate an increase in rabbit bones over large game, and include fish and turtle for the first time. MacNeish (1991:695, 697) characterizes this phase as a trend toward larger and more numerous base camps occurring in a broader area. The village settlement in the Later Mesilla and El Paso phases in the Jornada Mogollon sequence, as with the early and late Glencoe phases identified by Kelley in the southern Sierra Blanca region (1984), apparently developed out of this shift toward sedentism made possible by the adoption of horticulture.

Puebloan Settlement

The sparsity of data and systematic archaeological investigations in the Sacramento Mountains has precluded the development of a detailed cultural chronology for the region. However, previous investigators have proposed periods of occupation congruent with the regional chronology outlined above, with significant shifts in the Pithouse period with the appearance of villages near alluvial fans along the western escarpment, and in the Puebloan period during which time dispersed residencies of above-ground structures are found scattered throughout the forest, particularly in the piñon-juniper belt or ponderosa transition zone. Kelley (1984) defined Puebloan period phases based on her work in the Sierra Blanca region. In the north she proposed the Glencoe phase, ca. A.D. 900-1000, the Corona phase, A.D. 1100-1200, and the Lincoln phase, A.D. 1200-1400). In the south she defined the early Glencoe phase, coeval with the Glencoe phase in the north, and the late Glencoe phase, A.D. 1100-1400. Even this dispersed settlement appears to have diminished after 1300 or 1400, with no evidence for occupation again until the 1700s when Mescalero Apache settled in the area (see Stuart and Gauthier 1981; Spoerl 1983).

Historical Period

Historical Anglo-European immigration accompanied the removal to reservations of the various Apache groups in the late 1880s. Soon after, development of timber and mineral resources led to the institution of towns, railroad spurs, and roads. Ranching flourished in the open grasslands of the region.

Expectations for Discovery

Investigations at Fresnal Shelter demonstrates evidence for settlement in the region from at least as early as ca. 7,500 ybp, based on radiocarbon ages of deposits and diagnostic projectile point styles. The recovery of botanical data from the shelters also supports the contention that Paleoindian, Archaic, and Pithouse period peoples in the region were utilizing a broad spectrum of resources in the region, and that they harvested the endemic plant and animal resources of the piñon-juniper-oak woodland within which the shelters are found. However, there is little intensive inventory from the surrounding area to consider settlement outside the shelters themselves. This lack of site and settlement data appears to be a product of limited investigation as much as of low-density settlement. Within one mile of the present project area only three block surveys have been conducted. One, nearest the present project, recorded only five sites on 1134 acres (Michalik 2004). Another, located in slightly higher elevation around 7,200 to 7,400 feet amsl, a total of ten small artifact scatters were recorded on approximately 600 acres that were surveyed (Mauldin 1999). A third, conducted near Karr Canyon, reported only three sites in a survey area of approximately 700 acres (Michalik 1989). Fire-cracked rock and lithic scatters are common in the Bug Scuffle Hill and Walker Spring at the south end of Westside Road, and these areas are more comparable to the present project area than the surrounding terrain (pers. comm. Eric Dillingham). Otherwise, these sites indicate a potential for scattered small sites, but also suggest that there was limited settlement throughout the prehistory of the region.

Previous Research

Spoerl (1983) proposed that there is little evidence for intensive settlement of the western Sacramento Mountains region. Despite considerable settlement data from all periods of occupation in the region in surrounding areas, the western slopes do not show evidence of intensive or extensive settlement. However, this may result from biases in survey coverage as much as from lack of cultural resources. Less than 1,500 acres in the High Rolls area have been intensively surveyed. Both areas, as discussed above (Mauldin 1999; Michalik 2004) did provide evidence of settlement from the discovery of lithic and/or ceramic artifacts. The majority of surveys in the area consisted of linear surveys (Table 1: Previous Investigations). In these, the majority of sites discovered were historical period railroad and mining sites.

Table 1. Previous investigations

Project Number	Author	Title
1979-08-050	Spoerl, P.M.	Horse Psture Fuelwood Sale, Cloudcroft Ranger District, Lincoln National Forest, New Mexico
1980-08-051	Beaty, A.L.	Six Range Improvement Projects, Cloudcroft Ranger District, Lincoln National Forest, New Mexico
1981-08-032	Koczan, Steven	Cultural Resource Investigation at a Proposed fence Location on US 82 in Lincoln National Forest
1983-08-002	Bash, Dallas	Cultural Resource Investigation, the Rock House Spring, Mineral Spring and Hackberry Spring Development Project
1984-08-018	Wirtz, Arthur	Cultural resources Survey of Lot 25, Section 5, T. 16 S., R. 11 E., NMPH for Small Tracts Acquisition Proposals (4), Cloudcroft Ranger District, Lincoln National Forest
1984-08-025	Bash, Dallas	A Cultural Resources Investigation of the Proposed Dry Canyon Road Closure Cloudcroft District, Lincoln National Forest, New Mexico
1986-08-065	Johnson, David	West Side Road –Road Closures, Cloudcroft District, Lincoln National Forest , Otero County, New Mexico
1989-08-007	Mckean, Summer	Arcente Canyon Oak Crush and Burn, Cultural Resource Survey, Cloudcroft Ranger District, Lincoln National Forest, Otero County, New Mexico
1989-08-076	Beidl, Jacqueline	West Side Road Wildlife Openings, Cultural Resource Survey, Cloudcroft Ranger District, Lincoln National Forest, Otero County, New Mexico
1989-08-123 B	Michalik, Laura	An Archaeological Clearance Survey of A 60 Acre Parcel of Land Slated For Exchange Near Pierce Canyon, Cloudcroft Ranger District, Lincoln National Forest, Otero County

Project Number	Author	Title
1989-08-123 C	Michalik, Laura	A testing Report of Three Sites Located Near High Rools, Cloudcroft Ranger District, Lincoln National Forest, Otero County, New Mexico
1990-08-062 B	Johnson, David	Research Design for the Data Recovery, 02-281, 282, 283, Western Bank Land Exchange, Cloudcroft Ranger District, Lincoln National Forest
1990-08-100	Beidl, Jacqueline	Tinkler Site Cultural Resource Site Inspection, Cloudcroft Ranger District, Lincoln National Forest, Otero County, New Mexico
1990-08-149	Beidl, Jacqueline	High Rolls Electronic Site, Cultural resource Survey, Cloudcroft Ranger District, Lincoln National Forest, Otero County, New Mexico
1990-08-160	Tagg, Martyn	Fresnal Shelter (AR-03-08-02-002), Cultural Resource Site Inspection, Cloudcroft Ranger Districts, Lincoln National Forest, Otero County, New Mexico
1990-08-166	Beidl, Jacqueline	Analyses of Artifacts from Three Potential Apache Sites
1991-08-011 D,E	N/A	Fresnal Shelter (AR-03-08-02-002) National Register Nomination
1991-08-037	Shileds, Helen	An Archaeological Survey Of 2.4 Miles Of Proposed Water Line Installation In Fresnal Canyon, Otero County, New Mexico
1991-08-039	Johnson, David	Site AR-03-08-02-268 Disturbance during the Courney Fuelwood Sale Cultural Resource Investigation, Cloudcroft Ranger District, Lincoln National Forest, Otero County
1992-08-026	Tagg, Martyn	Fresnal Shelter (AR-03-08-02-002), Cultural Resource Site Inspection II, Cloudcroft Ranger Districts, Lincoln National Forest, Otero County, New Mexico
1992-08-026	Tagg, Martyn	Fesnal Shelter Site Inspection II
1992-08-112	Moots, Rita	Goat Springs Trail Maintenance T90K, Cultural Resource Survey Cloudcroft Ranger District, Lincoln National Forest, Otero, New Mexico
1993-08-025	Moots, Rita	Fresnal Shelter (AR-03-08-02-002), Cultural Resource Site Inspection II, Cloudcroft Ranger Districts, Lincoln National Forest, Otero County, New Mexico
1993-08-091	Tagg, Martyn	48th Air Rescue Squadron Training Areas Cultural Resource Survey for Holloman Air Force Base, Lincoln National Forest, Cloudcroft Ranger District, Otero County
1994-08-130	Fulton, Jean	Fresnal Canyon Rails-To-Trails, Cultural resource Survey, Cloudcroft Ranger District, Lincoln National Forest, Otero County, New Mexico
1994-08-130B	Fulton, Jean	Cultural Resource Survey, Sacramento Ranger District, Lincoln National Forest, Otero County, New Mexico
1996-08-050	Levine, Daisy	A Cultural Resource Invensotry of 8.3 Kilometers (5.2 Miles) along US 82 Near the Tunnel Between Alamogordo and Cloudcroft and a Detour 'West of High Rolls
1996-08-055	White, Diane	Multiple Property Listing, Rockshelter Sites of the Western Escarpment of the Sacramento Mountains
1997-08-047	White, Diane	Fresnal Canyon Pipeline Replacement, Previous Survey Documentation, Sacrament Ranger District, Lincoln National Forest, Otero County, New Mexico
1998-08-041	Levine, Daisy	A Cultural Resource Invensotry of 8.3 Kilometers (5.2 Miles) along US 82 Near the Tunnel Between Alamogordo and Cloudcroft and a Detour 'West of High Rolls
1998-08-062	Mauldin, Raymond	An Archaelogical Survey of the Cloudcroft and High Rolls Urban Interface, Lincoln National Forest, Otero County New Mexico
2002-08-082	Dillingham, Eric	Salado Canyon Rails-To-Trails, Cultural resource Survey 2002-08-082, Sacramento Ranger District, Lincoln National Forest, Otero County, New Mexico
2004-08-019	Michalik, Laura	La Luz Wildlife Openings - Phase II, Sacramento Ranger District, Lincoln National Forest, Otero County, New Mexico

One site was previously recorded on the present project area. The "Tinkler" Site (AR-03-08-02-268) consists of an extensive artifact scatter, over 1100 square meters in size, where a metal "tinkler" associated with Protohistoric Mescalero Apache settlement was found. Other materials include a variety of chipped lithic materials. No features were recorded on the sites.

The "Tinkler" Site, AR-03-08-02-268 (LA72637) was said to have been originally recorded by Marty Tagg in 1989, but Beidl is the author of the report with the original site recording (Beidl 1989). She and David Johnson revisited and mapped the site in June 1990. Two possible alignments of sandstone cobbles and blocks associated with grey and white secondary, tertiary, and bifacial thinning flakes scattered over an 1100 square meters area was recorded in 1989. In 1990 Beidl expanded the area to 2,173 square meters with a 115 square meter "core" area, apparently the area in which the "tinkler" was found (Beidl 1990a).

In her 1989 recording Beidl interpreted the sandstone cobbles as natural outcrops. She extrapolated from sample collections that there were approximately 7,306 artifacts on the site. In this report and in her masters thesis, she concludes that the site was an Apache era ephemeral campsite, though the only basis for this is the single tinkler found on the site. In fact, she allowed that "It is likely, therefore, that many "Apache" sites, in actuality, are but one component of multi-component aboriginal sites" (1990b:226). She argues that, of possible Apache sites in the area, the Tinkler Site "is the one most likely to represent the remains of a single occupation or event. Although the tinkler found on the site cannot be conclusively associated with either the Apache or other artifacts on the site, the possibility remains that one (or both) of these relationships is (are) an accurate

reflection of the past. As such, the Tinkler site may provide an example of the types of artifacts an archaeologist might expect to find at a small, brief occupation Apache campsite" (1990b:226). This claim aside, she acknowledges that the lithic assemblages on the Tinkler Site and the Shattuck Site "are remarkably similar"(1990b:218), even though "the Shattuck artifacts are temporally mixed, and thus their combined (temporally insensitive) analyses may obscure actual relationships (and resultantly derived patterns) between the artifacts" (1990b:227).

The site does appear remarkably similar to many found in the present project. These appear to be multi-component and conflated assemblages ranging from Late Paleoindian to recent protohistoric Apachean. Because of the long term and apparently ephemeral occupations, it is difficult to associate any individual artifacts chronologically with others on the same site. Further, alternatively aggrading and degrading terrain has further mixed the deposits. The preference for grey and white chert is undoubtedly because these are naturally occurring local materials that constitute one of the many reasons attractive for settlement in this area.

Adjacent to the project area is the historic Courtney Mine (AR-03-08-02-221) where mine pits, tailing piles, roads, trash, and foundations were recorded. During a revisit to the site, three isolated occurrences of chert flakes were also recorded along the linear trail survey (Moots 1992).

Fresnal Shelter (AR-03-08-02-002) has been the site of various projects (Tagg 1996), and has contributed significant data toward regional archaeological studies. Unfortunately, until the present project was undertaken, there has never been systematic intensive archaeological study of the surrounding archaeological landscape.

Given the long period of documented occupation in Fresnal Shelter, the evidence for dispersed artifact scatters found on block surveys in the surrounding area, low to moderate density of artifact scatters and ephemeral campsites with thermal features and possibly midden remains were expected for the project area. However, the lack of data arising from under-survey as well as possibly survey bias from subsequent site burial and/or erosion has been misleading. Surveys in the area have been mostly linear trail surveys where disturbed terrain may have masked or destroyed evidence of sites or isolated occurrences. Many of the cultural resource investigations have focused solely on Fresnal Shelter and on the historical period railroad features in Fresnal Canyon. Accordingly, prehistoric resources have been under-represented in the regional inventory.

Table 2. Sites on or within One Mile of Project Area.

AR-03-08-02-	LA Number	Description	Location
268	72637	Tinkler Site, artifact scatter	On Project Area
2	10101	Fresnal Shelter	Within One Mile
47	65504	Historical railroad	Within One Mile
48	65505	Lithics, sherd, mounds	Within One Mile
122	61361	Historical cabin	Within One Mile
220	24021	Lithic, sherd scatter	Within One Mile
221	24020	Historical Courtney Mine	Within One Mile
222	22949	Lithic, sherd scatter	Within One Mile
248	72320	Lithic, sherd scatter	Within One Mile
281	76411	Lithic scatter	Within One Mile
282	76412	Lithic scatter	Within One Mile
283	76413	Lithic scatter	Within One Mile
398	107268	Historical railroad features	Within One Mile
401	108587	Historical railroad	Within One Mile
416	114103	Rock shelter	Within One Mile
417	114520	Historical tunnel	Within One Mile
462	122804	Lithic, sherd scatter	Within One Mile
463	122805	Lithic scatter	Within One Mile
464	122806	Lithic scatter	Within One Mile
465	122807	Lithic scatter	Within One Mile
466	122808	Lithic, sherd scatter, hearths	Within One Mile
467	122809	Lithic, sherd scatter, hearth	Within One Mile
468	122810	Lithic scatter	Within One Mile
469	122811	Lithic scatter	Within One Mile
470	122812	Lithic scatter	Within One Mile
471	122813	Lithic scatter	Within One Mile
585	137053	Historical railroad	Within One Mile

Survey Methods and Results

The project area was systematically inspected for cultural resources on 100% of 1,766 acres in the project area. Pedestrian survey consisting of parallel transects no greater than 15 meters apart was conducted throughout the area. Visual inspection of terrain for surface finds of lithic and ceramic artifacts; remains of features such as fire-cracked rock from hearths and middens, rock alignments, and mounds; and human alterations in the ground surface such as prospect pits or road and trail construction.

Survey Methodology

A 100 percent Class III archaeological survey was conducted at the Martinez Vegetation Management Project in the Lincoln National Forest. The survey was conducted with a crew ranging in size from two to five archaeologists including Field Directors Timothy Graves and Juan Arias, Principal Investigator, John Peterson, GIS Director Mark D. Willis, and David Camarena. The methodology for this project deviated from that of a traditional survey by using techniques new to the Lincoln National Forest that facilitated the recording of data. The main difference from other surveys undertaken in the Lincoln National Forest was the use of Differentially-corrected Global Positioning System (DGPS) in combination with a Geographic Information Systems (GIS). Prior to field survey, the project boundaries and locations of previously recorded sites were imported into ArcGIS 8.3, which is a GIS package produced by ESRI corporation and extensively used by the NFS and other government agencies. This allowed for the proposed vegetation management area and the digital data such as USGS topographic maps (DRGs) and USGS Digital Orthophoto Quarter Quadrangles (DOQQs) to be viewed in relation to each other.

Armed with this digital model the archaeologist began field studies. A great deal of archaeological material was discovered during the survey. When an artifact was encountered, extra scrutiny was given to the area near it. If the item(s) was isolated or did not meet the project criteria to qualify as a site, it was noted as an Isolated Manifestation (IM). If the area included features or a concentration of artifacts, it was recorded as a cultural resource site. The site and IM definition criteria utilized for the purposes of the report are as follows:

Site Definition

1. One or more features including rock art panels

2. One formal tool, if associated with other cultural materials, or more than one formal tool.

3. An occurrence of cultural materials (such as pottery sherds, chipped stone or historic items) that contains one of the following:

a. Three or more types of artifacts or raw materials

b. Two types of artifacts or materials in a density of at least 15 items per 100 square meters.

c. A single type of artifact or material in a density of at least 25 items per 100 square meters.

Isolated Manifestations

1. non-aboriginal historic remains, if clearly representing one or a few episodes of trash discard from a non-local source;

2. a locus of sherds which appear to be from the same vessel (i.e. a pot bust);

3. a locus of flakes which appear to be from the same nodule (i.e. an episode of core reduction or tool manufacture).

When a cultural resource was identified, it was recorded in the DGPS with help of a data dictionary. The data dictionary was custom created by the archaeologists to contain menus of artifacts and features that they anticipated to be discovered in the area. This menu identified artifacts by type (debitage, projectile point, biface, etc), material (sandstone, chert, Alibates dolomite, etc), and other important details. For features, the menus recorded type (FCR concentration, FCR scatter, cairn, etc), dimensions, intactness,

and other characteristics. Seldom do archaeologists find exactly what they are looking for, and because of this, the data dictionary was given the flexibility for new artifacts and features types to be added on the fly. It is important to note that the digital recording of cultural resources did not preclude paper notes, sketches and descriptions being made at sites. The DGPS and GIS were used to augment traditional methods of recording sites, not replace them.

As sites were discovered and recorded, some were found to extend beyond the survey area. The archaeological materials were recorded to define the full extent of the sites within the project area only. To photo-document the sites, black and white analog and digital photographs were taken of each site and feature from different angles. Additionally, all diagnostic and unusual artifacts were photographed. The digital photos were taken at a minimum resolution of 3.1 mega pixels. A photo log was maintained for each analog and digital picture.

At the end of each field day, all the digital data, gathered from DGPS and digital camera, were downloaded to a laptop computer. The data dictionaries were then differentially corrected via the internet with a United States Army base station at White Sands Missile Range. This data was then reviewed for accuracy and the extents of each day's survey were checked against field maps.

The methodology employed for this project was very successful at accurately defining locational information to protecting cultural resources. It also saved time and money by facilitating the rapid recording of the massive amount of data in the project area. Without this sophisticated approach the time to properly record these sites would likely have taken much longer. Additionally, it has reduced the cost of cultural resource

management for the Forest Service by providing digital mapping data of all the resources in the native format that the NFS requires. In other words, highly paid GIS personnel will not have to integrate paper maps into the digital NFS GIS system and the chance for errors in the system will be reduced.

Site Recording

Data observed for each site was recorded on Forest Service site forms (F3-FS-2300-2) and on Museum of New Mexico Laboratory of Anthropology site forms. Sketch and locator maps were compiled for each site form.

In addition to noting cultural aspects of sites, fire-sensitive sites (piled wood or other items) were documented if deemed a potential hazard to the sites (Appendix A).

Features and structures were photographed using black and white film as well as digital imagery. Diagnostic projectile points were drawn as well as documented photographically.

All sites were plotted on USGS 7.5' contour topographic maps for the area, as well as through GPS technology. A datum tree was designated on each site and a metal tag with the site number stamped on it was placed on the datum.

Quality Control

Quality Assurance transects were conducted by walking transects perpendicular or diagonally to those walked in the primary inventory survey. Initial transects were conducted east/west in the southern half of the project area, and north/south in the northern and northwestern portions of the project. Four ½ mile cross transects were walked on May 24 by Graves, Arias, Camarena, and Peterson in the southern project area; Mark Willis walked 2 transects of approximately one mile each in the northern

project area on July 6 and 7. The quality of the survey was to found to be good and only a few new artifacts were found. No new sites were discovered during quality control.

Cultural Resource Sites

One previously recorded site, the Tinkler Site (LA72637, 02-268) was revisited during the present project. During the survey 71 newly recorded sites were found (Figure 2 and Table 3). These sites ranged from small scatters of lithic and sometimes also ceramic artifacts to very large extensive sites with multiple features. Discovery of diagnostic lithic and ceramic artifacts indicate that some sites were multiple component ranging from Late Paleolithic to recent Protohistoric period occupations. Of note, there were few ring middens found in the project area. The project area as a whole exhibited this same range of settlement periods among the many sites, large and small, that were found and recorded.

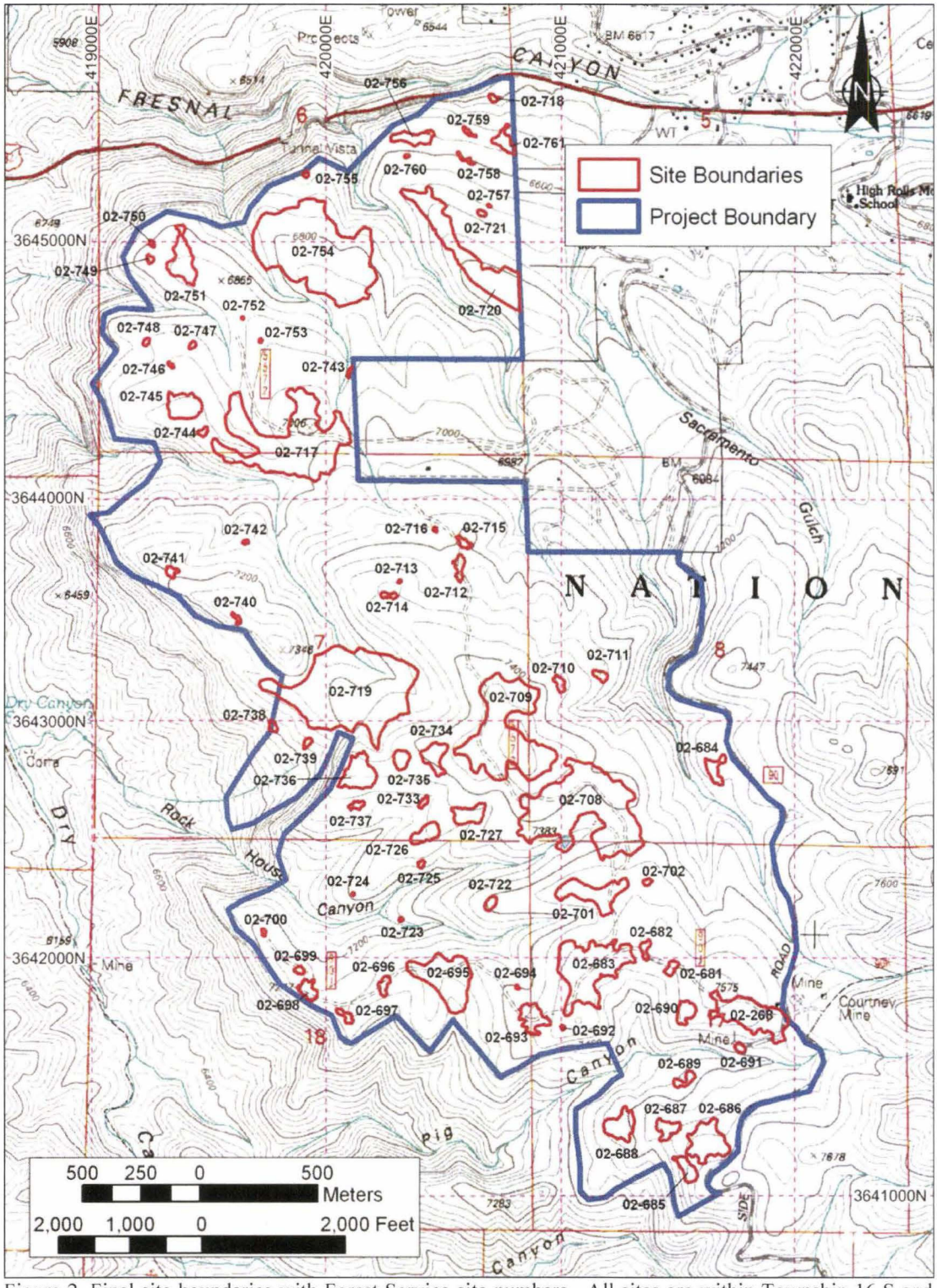

Figure 2. Final site boundaries with Forest Service site numbers. All sites are within Township 16 S and Range 11 E. Scale=1:24,000. Base map: USGS 7.5' topographic quadrangle map - High Rolls, NM. Archaeological Survey of the Martinez Vegetation Management Project. Project Number 2004-08-047.

Table 3. Site summary table.

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
72637	268	1	421816	2641847	Structural	Prehistoric/ Historic	The Tinkler Site – Extremely large prehistoric lithic artifact and mining related site – 337 m E/W x 228 m N/S - Extensive lithic artifact scatter with scatter of historic cultural materials and five cultural features that include two prospect pits, one cairn, and alignment of cobbles, and a bedrock mortar	D	Yes
144831	681	2	421470	3642033	Structural	Prehistoric	Large size lithic artifact scatter – 85 m N/S x 81 m E/W – Scatter of lithic flake debitage and two projectile points and one boulder/cobble alignment feature	D	Yes
144830	682	2	421354	3642124	Non-structural	Unknown	Moderate size lithic artifact scatter – 76 m N/S x 40 m E/W - Scatter of lithic debitage	D	No
144834	683	2	421104	3642012	Structural	Prehistoric/ Historic	Prehistoric camp site – Extremely large – 335 m E/W x 325 m N/S - Recorded 14 features that include one prospect pit, a historic hearth, four burned rock middens, eight fire-cracked rock concentrations, and > 5,000 lithic artifacts with a total of nine projectile points, two historic bottle finish's	D	Yes
144816	684	59	421659	3642850	Structural	Prehistoric/ Historic	Large size prehistoric lithic artifact scatter and historic mining site – 120 m N/S x 87 m E/W - Four features that include one historic trash dump, two prospect pits, and one depression, low density scatter of historic trash, low density scatter of lithic artifacts, and two concentrations of lithic artifacts	D	Yes
144848	685	24	421551	3641175	Non-structural	Unknown	Large size prehistoric lithic procurement and artifact scatter site – 106 m N/S x 99 m E/W - > 1000 lithic artifacts, gray and white/tan chert procurement site, lithic tool manufacture	D	Yes

LA#	FS# (AR-·03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144847	686	20	421584	3641305	Structural	Prehistoric	Very Large prehistoric residential/camp site – 192 m E/W x 190m N/S - One Structure, two burned rock middden features, one cairn, one hearth with boulder arrangement with > 5,000 lithic artifacts, some groundstone, El Paso brownware ceramic concentration, potential pithouse depressions, two projectile points	D	Yes
144846	687	19	421457	3641365	Structural	Prehistoric	Large prehistoric camp site – 102 m E/W x 78 m N/S - Documented three burned rock midden features of a potential 10 burned rock middens and > 10,000 lithic artifacts in saddle of a ridge.	D	Yes
144845	688	18	421281	3641395	Structural	Prehistoric	Very large prehistoric residential site – 143 m N/S x 118 m E/W - two structures, four thermal features, one large charcoal stained midden area, > 10,000 Lithic artifacts with one documented double tipped projectile point and some groundstone on ridge	D	Yes
144844	689	17	421525	3641551	Structural	Prehistoric	Large prehistoric camp site – 88 m E/W x 65 m N/S - Lithic artifact scatter with one fire-cracked rock concentration with charcoal stained sediment feature, T Hester says Bajada projectile point – T. Graves says Late Paleoindian or San Jose, and Chupadero Black-on-white	D	Yes
144839	690	5	421542	3641877	Non-structural	Prehistoric	Large Prehistoric lithic artifact scatter – 93 m N/S x 78 m E/W - Scatter of lithic artifacts with two concentrations – two projectile points	D	Yes
144843	691	11	421763	3641546	Structural	Historic	Moderate size historic mine site – 46 m E/W x 46 m N/S - Mine shaft feature and Sluice Area feature with low density scatter of historic cultural materials	D	Yes
144842	692	65	421005	3641790	Non-structural	Prehistoric	Small size lithic artifact scatter – 18 m N/S x 19 m E/W - Low density lithic artifact scatter with two projectile points	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144841	693	74	420886	3641811	Structural	Prehistoric	Very large prehistoric camp site – 134 m N/S x 130 m E/W - Low to moderate density of lithic artifacts with some historic cultural materials, two fire-cracked rock concentration features with one containing charcoal stained sediment.	D	Yes
144837	694	83	420824	3641951	Non-structural	Unknown	Small lithic artifact scatter – 19 m E/W x 18 m N/S – located at head of south fork of Rock House Canyon	D	No
144835	695	66	420510	3642047	Structural	Prehistoric/ Historic	Extremely large prehistoric/historic camp site – 314 m E/W x 252 m N/S - Four Burned rock midden features, one fire-cracked rock concentration feature, seven projectile points, two historic crimped cartridges, historic glass and low to high density scatter of lithic artifacts. White chert projectile point base fragment, other lithic artifacts and charcoal stained sediments	D	Yes
144836	696	No Field Number	420243	3641959	Structural	Prehistoric	Moderate size prehistoric camp site – 80 m N/S x 47 m E/W - Three Burned rock midden features and low density lithic artifact scatter that includes scattered fire-cracked rocks	D	Yes
144840	697	67	420098	3641844	Structural	Prehistoric	Moderate size prehistoric camp site – 76 m E/W x 59 m N/S - One thermal fire-cracked rock feature with charcoal, lithic artifacts, one expanded stem projectile point	D	Yes
144838	698	68	419923	3641941	Structural	Prehistoric/ Historic	Large size prehistoric camp site – 84 m N/S x 80 m E/W - Two burned rock midden features with low density scatter of lithic artifacts	D	Yes
144832	699	69	419888	3642020	Structural	Prehistoric/ Historic	Moderate size prehistoric camp site – 41 m E/W x 31 m N/S - One burned rock midden feature with low density lithic artifact scatter	D	Yes
144829	700	71	419736	3642186	Structural	Unknown	Small prehistoric camp site – 29 m N/S x 21 m E/W - Two fire-cracked rock concentration features with low density lithic artifacts	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144825	701	26	421241	3642378	Structural	Prehistoric	Very large size prehistoric residential/camp site with extensive lithic artifact scatter and historic material scatter – 304 m E/W x 156 m N/S – Identified two boulder alignments potential structure remains, three burned rock midden features, and three fire-cracked rock concentration features with a low to high density of lithic artifacts along with a few historic sanitary cans and one tobacco tin. Includes a three diagnostic projectile points including a Harrel style projectile point at 421095E 3642398N.	D	Yes
144824	702	39	421866	3642400	Structural	Prehistoric	Moderate size prehistoric lithic artifact scatter and historic cultural material scatter – 34 m E/W x 30 m N/S - Low to moderate density lithic artifact scatter with three cultural features – two boulder/cobble concentrations and one historic hearth with scatter of hole in top and sanitary cans	D	Yes
144820	708	27	421065	3642774	Structural	Prehistoric/ Historic	Extremely large site – 526 m E/W x 435 m N/S -Low to high density lithic artifact and historic artifact scatter with 13 of > 60 cultural features recorded – [One historic tank with two associated berms and fence, six burned rock midden features, two cairns (one section corner), one fire-cracked rock concentration, two prospect pits, one chipping station], documented five projectile points and obsidian artifacts	D	Yes
144812	709	29	420716	3642996	Structural	Prehistoric	Extremely large site - 450 m E/W x 458 m N/S – Prehistoric camp site with mining activities – thus far three burned rock midden features, three fire-cracked rock concentrations, two circular boulder alignment structures with potentially more, two prospect pits, one cairn, two projectile points	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144809	710	51	420990	3643212	Structural	Prehistoric	Moderate sized prehistoric camp 70 m N/S x 44 m E/W - Lithic scatter of flakes, cores, uniface, biface fragments, One burned rock midden feature	D	Yes
144808	711	56	21157	3643260	Structural	Prehistoric	Moderate sized prehistoric camp – 67 m E/W x 50 m N/S - Lithic artifact scatter with two burned rock midden features	D	Yes
144803	712	44	420568	3643675	Non-structural	Prehistoric	Moderate sized prehistoric lithic artifact scatter – 110 m N/S x 54 m N/S – Two projectile points, several biface tools, one end scraper, cores, and flake debitage all exposed in area with arroyos dissecting and undercutting surrounding terrain from 0.10 m to 1.5 m in depth.	D	Yes
144806	713	34	420317	3643649	Structural	Prehistoric	Small prehistoric site – 12 m N/S x 11 m E/W – One shrine of cobble/boulder alignments that contain opening facing directly north with one lithic flake on northern slope of ridge.	D	Yes
144805	714	32	420276	3643595	Structural	Prehistoric	Moderate sized prehistoric camp site with six burned rock midden features and low to moderate density of lithic artifacts in saddle on ridge.	D	Yes
144802	715	55	420587	3643814	Non-structural	Unknown	Moderate sized prehistoric lithic artifact scatter – 77 m E/W x 54 m N/S – One high density lithic artifact concentration 40 m E/W x 8.0 m N/S	D	Yes
144800	716	49	420468	3743876	Non-structural	Unknown	Small prehistoric camp site – 23 m N/S x 17 m E/W – One fire-cracked rock concentration feature with charcoal and low density lithic artifact scatter	D	Yes
144799	717	33	419810	3644168	Structural	Prehistoric/ Historic	Extremely large prehistoric camp site - 600 m E/W x 395 m N/ S containing > 15 burned rock midden features, > three fire-cracked rock feature, 13 documented projectile points, historic amethyst glass fragments, and low to high density of lithic artifacts that include extremely high number of bifacial tool and tool fragments.	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144777	718	76	420724	3645667	Non-structural	Prehistoric	Moderate sized prehistoric procurement and tool production site 50 m E/W x 32 m N/S – includes several bifacially shaped tools and one projectile point fragment with one barb missing	D	Yes
144810	719	98	419958	3643231	Structural	Prehistoric	Extremely large Prehistoric camp/residential site – 680 m E/W x 432 m E/W – includes > 12 burned rock midden features, six fire-cracked rock concentration features, one potential structure remain, low to high densities of lithic artifacts including six projectile points and a high number of bifacial shaped tools	D	Yes
144788	720	79	420852	3644994	Structural	Prehistoric	Extremely large prehistoric camp/residential and lithic procurement site extending 800 m SE x NW x 160 m maximum width – includes > two burned rock midden features, two fire-cracked rock concentration features, one boulder alignment possible structure, one documented projectile point, and > 1,000,000 lithic artifacts	D	Yes
144785	721	91	420657	3645181	Non-structural	Unknown	Small prehistoric lithic artifact scatter extending 50 m E/W x 24 m N/S with 45 documented lithic artifacts on the surface with most in two clusters	D	No
144827	722	112	420703	3642311	Structural	Prehistoric	Moderate sized prehistoric camp site - 57 m N/S x 54 m E/W – Three fire-cracked rock concentrations with one containing dark charcoal stained sediments and a low density lithic artifact scatter with one diagnostic projectile point base fragment	D	Yes
144828	723	148	420325	3642240	Structural	Unknown	Small prehistoric camp site – 21 m N/S x 17 m E/W – One fire-cracked rock concentration with a few scattered lithic artifacts	D	Yes
144826	724	146	420113	3642350	Structural	Unknown	Small prehistoric camp site – 11 m N/S x 9 m E/W – One fire-cracked rock concentration with a few scattered lithic artifacts	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144823	725	147	420408	3642471	Structural	Prehistoric	Small prehistoric camp site – 31 m N/S x 29 m E/W – One burned rock midden feature with charcoal stained sediments and one fire-cracked rock concentration feature with a few scattered lithic artifacts	D	Yes
144822	726	113	420437	3642590	Structural	Prehistoric	Large prehistoric camp site – 126 m x 56 m – Documented five burned rock midden features with charcoal stained sediments – estimate potentially > 5 more similar features with a low density scatter of lithic artifacts and ceramics that include one projectile point base, one piece of Lincoln Black-on-red and three pieces of Chupadero Black-on-white	D	Yes
144821	727	104	420606	3642677	Structural	Prehistoric	Very large prehistoric camp – 145 m E/W x 87 m N/S – Documented one large burned rock midden feature, five fire-cracked rock concentration features with two containing charcoal and eroding out of deep drainage cut, three projectile points, and low to moderate density lithic artifact scatter	D	Yes
144818	733	111	420415	3642732	Structural	Prehistoric	Moderate size prehistoric camp – 68 m SW/NE x 28 m SE/NW – Documented two large burned rock midden features, one fire-cracked rock concentration with charcoal eroding out of deep drainage cut, and a low density scatter of lithic artifacts	D	Yes
144814	734	95	420473	3642883	Structural	Prehistoric	Very large prehistoric camp site – 147 m N/S x 110 m E/W – Documented one small burned rock midden feature and a fire-cracked rock concentration along with a low density scatter of lithic artifacts including one projectile point	D	Yes
144815	735	110	420334	3642914	Non-structural	Prehistoric	Large prehistoric lithic artifact scatter – 88 m N/S x 67 m E/W – Identified a low density scatter of multiple lithic material types and lithic artifact types including recording three different projectile points (Bajada, Dalton, and Lerma – obsidian)	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144817	736	136	420115	3642837	Structural	Prehistoric	Very large prehistoric camp site – 163 m N/S x 160 m E/W – Documented three burned rock midden features, three fire-cracked rock concentrations, a low to moderate density of lithic artifacts which included one projectile point and one El Paso brownware body ceramic	D	Yes
144819	737	144	420127	3642723	Structural	Prehistoric	Moderate sized prehistoric camp site – 67 m E/W x 33 m N/S – Documented three burned rock midden features and a low density scatter of lithic artifacts that includes one projectile point	D	Yes
144811	738	138	419769	3643035	Non-structural	Unknown	Moderate sized prehistoric lithic procurement and reduction site – 48 m N/S x 34 m E/W – Contains low to moderate density scatter of lithic artifacts	D	Yes
144813	739	137	419923	3642985	Non-structural	Unknown	Moderate sized prehistoric lithic procurement and reduction site – 48 m length x 26 m width – Low to moderate density scatter of lithic artifacts including one bifacial shaped tool	D	Yes
144807	740	115	419619	3643509	Non-structural	Unknown	Moderate sized prehistoric lithic artifact scatter – 59 m x 18 m – Small chipping station with a few scattered lithic artifacts and a few scattered fire-cracked rock	D	Yes
144804	741	116	419338	3643678	Structural	Prehistoric	Moderate sized prehistoric camp – 58 m E/W x 41 m N/S – Two fire-cracked rock features and a low density lithic artifact scatter, one horseshoe	D	Yes
144801	742	117	419684	3643816	Non-structural	Unknown	Small Prehistoric camp site – 28 m E/W x 15 m N/S – Moderate density scatter of fire-cracked rocks with some charcoal staining and an associated low density lithic artifact scatter	D	Yes
144796	743	169	420098	3644524	Structural	Unknown	Small prehistoric camp site – 52 m x 6 m – One roasting pit feature with large charcoal chunks eroding out of drainage cut bank with a low density scatter of lithic artifacts	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144798	744	124	419741	3644269	Structural	Prehistoric	Moderate sized prehistoric camp – 43 m E/W x 37 m N/S – Four burned rock ring midden features, low density of lithic artifacts, and one El Paso brownware ceramic	D	Yes
144797	745	125	419394	3644358	Structural	Prehistoric	Very large prehistoric camp site – 171 m E/W x 123 m N/S – One burned rock midden feature and > two fire-cracked rock concentrations, low to moderate density of lithic artifacts	D	Yes
144795	746	156	419339	3644564	Non-structural	Unknown	Small prehistoric lithic artifact procurement and production site – 33 m x 19 m – Moderate to high density concentration of lithic artifacts	D	Yes
144794	747	155	419430	3644646	Non-structural	Unknown	Small prehistoric lithic artifact procurement and production site – 33 m N/S x 27 m E/W – Low to high density concentration of lithic artifacts	D	Yes
144792	748	123	419238	3644655	Structural	Prehistoric	Small Prehistoric camp site – 36 m E/W x 27 m N/S – One burned rock midden feature and low density scatter of lithic artifacts	D	Yes
144789	749	128	419258	3645000	Non-structural	Unknown	Moderate sized prehistoric lithic artifact scatter – 39 m N/S x 34 m E/W – Low to moderate density scatter of lithic artifacts	D	Yes
144786	750	122	419261	3645039	Non-structural	Unknown	Small prehistoric lithic artifact scatter – 28 m N/S x 24 m E/W – Low to moderate density scatter of lithic artifacts	D	Yes
144790	751	121	419376	3645024	Structural	Prehistoric	Very large prehistoric camp site – 252 m N/S x 116 m E/W - > Two burned rock midden features and > one fire-cracked rock concentration – low to high density of lithic artifacts	D	Yes
144791	752	158	419642	3644758	Non-structural	Unknown	Small prehistoric lithic artifact scatter – 11 m x 10 m – Low density scatter of lithic artifacts	D	No
144793	753	None	419721	3644669	Structural	Prehistoric	Small Prehistoric camp site – 21 m E/W x 15 m N/S – One burned rock midden feature and low density scatter of lithic artifacts	D	Yes

LA#	FS# (AR-03-08-02-)	Field Site	Easting	Northing	Type	Component	Item/Feature	Eligibility Criterion	Eligibility
144787	754	120	420069	3644825	Structural	Prehistoric	Extremely large prehistoric camp site – 532 m E/W x 446 m N/S – Three burned rock midde features and one fire-cracked rock concentration with low to high densities of scattered lithic artifacts, one historic bottle base fragment	D	Yes
144783	755	119	419916	3645356	Non-structural	Unknown	Small prehistoric lithic artifact scatter – 32 m N/S x 22 m E/W – Low to moderate density scatter of lithic artifacts	D	Yes
144779	756	118	420367	3645551	Non-structural	Unknown	Very large prehistoric lithic artifact procurement and production site – 195 m E/W x 75 m N/S – Low to high density scatter of lithic artifacts	D	Yes
144784	757	80	420695	3645225	Non-structural	Unknown	Small prehistoric lithic artifact concentration – 14 m E/W x 11 m N/S – Low to moderate density lithic chipping station of white chert	D	No
144782	758	90A	420601	3645411	Non-structural	Prehistoric	Moderate sized prehistoric lithic artifact scatter – 80 m x 14 m – Low to moderate density scatter of lithic artifacts with one projectile point fragment	D	Yes
144778	759	89A	420610	3645523	Non-structural	Unknown	Moderate sized prehistoric lithic artifact scatter – 79 m x 25 m – Low to moderate density scatter of lithic artifacts	D	Yes
144781	760	149	420344	3645429	Non-structural	Unknown	Small prehistoric lithic artifact procurement and production site – 29 m E/W x 16 m N/S – Low to moderate density scatter of lithic artifacts	D	Yes
144780	761	77	420725	3645480	Structural	Prehistoric	Very large prehistoric camp and lithic procurement/production site – 130 m N/S x 91 m E/W – One fire-cracked rock concentration feature and low to high density scatter of lithic artifacts	D	Yes

Isolated Manifestations

All isolated manifestations (IMs) were plotted by GPS and designated sequentially (Table 4 and Figure 3). Description of the isolate included type and distribution as well as location. Diagnostic materials were also drawn and photographed. IMs were scattered throughout the project area as scatters of artifacts that were insufficient in size or diversity to constitute a cultural resource site.

Table 4. Isolated Manifestations.

IM#	Amount	Type	Field IO#	Description	UTM Zone (NAD27)	NORTHING	EASTING
1	1	Historic	197	Artifact	13	3,645,710	420,743
2	1	Chert	198	Lithic Tool	13	3,645,570	420,447
3	2	Chert	199	Debitage	13	3,645,560	420,380
4	1	Chert	236	Debitage	13	3,645,480	420,427
5	2	Chert	201	Debitage	13	3,645,440	419,972
6	2	Chert	237	Debitage	13	3,645,430	420,438
7	1	Sandstone	215	Metate	13	3,645,400	420,261
8	1	Chert	200	Debitage	13	3,645,330	420,066
9	1	Historic	106	Cobble Alignment	13	3,645,294	420,659
10	2	Chert	214	Debitage	13	3,645,280	420,227
11	3	Chert	203	Debitage	13	3,645,270	419,852
12	7	Chert	250	Debitage	13	3,645,070	420,783
13	1	Chert	207	Lithic Tool	13	3,645,070	419,428
14	6	Chert	213	Debitage	13	3,645,070	419,321
15	2	Chert	101a	Debitage	13	3,644,990	420,738
16	1	Chert	239	Debitage	13	3,644,980	419,441
17	1	Chert	238	Debitage	13	3,644,920	419,723
18	1	Chert	208	Lithic Tool	13	3,644,890	419,336
19	1	Chert	255	Debitage	13	3,644,870	419,530
20	1	Chert	FS-154	Debitage	13	3,644,870	419,529
21	4	Chert	242	Debitage	13	3,644,840	419,730
22	2	Chert	245	Debitage	13	3,644,800	419,941
23	2	Chupadero Sherds		Ceramic	13	3,644,800	419,367
24	1	Chert	240	Debitage	13	3,644,780	419,540
25	1	Chert	105	Debitage	13	3,644,760	420,742
26	2	Chert	102	Debitage	13	3,644,750	420,801
27	3	Chert	256	Debitage	13	3,644,740	419,684
28	1	Chert	166	Debitage	13	3,644,740	419,674
29	3	Chert	112	Debitage	13	3,644,720	420,606
30	1	Chert	104	Debitage	13	3,644,660	420,663
31	1	Chert	248	Debitage	13	3,644,620	420,353

IM#	Amount	Type	Field IO#	Description	UTM Zone (NAD27)	NORTHING	EASTING
32	1	Chert	241	Debitage	13	3,644,610	419,611
33	4	Chert	257	Debitage	13	3,644,600	420,603
34	1	Historic	246	Hole-in-top Can	13	3,644,510	419,663
35	1	Chert	157	Debitage	13	3,644,460	419,283
36	3	Chert	254	Debitage	13	3,644,460	419,282
37	1	Chert	210	Debitage	13	3,644,350	419,167
38	3	Chert	211	Debitage	13	3,644,330	419,522
39	1	Historic	247	Solarized Bottle Fragment	13	3,644,280	419,782
40	1	Chert	39	Debitage	13	3,644,140	420,094
41	1	Chert	163	Debitage	13	3,644,060	420,000
42	1	Chalcedony	79	Debitage	13	3,644,020	420,767
43	2	Chert	78	Debitage	13	3,643,990	420,484
44	1	Projectile Point	173	Dart Point	13	3,643,990	419,998
45	1	Historic	146	Cartridge	13	3,643,910	420,128
46	1	Chert	80	Debitage	13	3,643,890	420,544
47	1	Chert	68	Debitage	13	3,643,860	420,451
48	2	Chert	89	Debitage	13	3,643,850	420,648
49	1	Chert	196	Debitage	13	3,643,760	419,247
50	1	Historic	195	Cairn	13	3,643,710	419,308
51	8	Historic	94	Sanitary Cans	13	3,643,700	421,502
52	1	Chert	92	Debitage	13	3,643,700	421,165
53	1	Chert	67	Debitage	13	3,643,700	420,658
54	1	Chert	57	Debitage	13	3,643,680	420,527
55	1	Chert	55	Debitage	13	3,643,670	420,317
56	2	El Paso Brownware Sherds	56	Ceramic	13	3,643,650	420,462
57	2	Chalcedony	93	Debitage	13	3,643,640	421,433
58	2	Chert	58	Debitage	13	3,643,640	420,548
59	1	Chert	162	Debitage	13	3,643,600	420,155
60	1	Sandstone	147	Mano	13	3,643,580	420,228
61	1	Chert	81	Debitage	13	3,643,560	420,892
62	1	Chert	40	Debitage	13	3,643,550	420,377
63	5	Chert	194	Debitage	13	3,643,550	419,547
64	2	Chert	193	Debitage	13	3,643,530	419,569
65	1	Chert	161	Debitage	13	3,643,510	420,273
66	1	Projectile Point	164	Dart Point	13	3,643,510	420,260
67	1	Chert	38	Debitage	13	3,643,500	420,308
68	2	Chert	90	Debitage	13	3,643,490	421,090
69	1	Limestone	174	Debitage	13	3,643,410	420,161
70	1	Chert	91	Debitage	13	3,643,370	421,324
71	1	Historic	59	Artifact	13	3,643,370	420,876
72	1	Historic	192	Cairn	13	3,643,370	419,808
73	1	Chalcedony	70	Debitage	13	3,643,340	420,932
74	1	Chert	135	Debitage	13	3,643,310	419,657
75	1	Chert	66	Debitage	13	3,643,300	420,927
76	1	Chert	60	Debitage	13	3,643,290	420,837
77	1	Chert	65	Debitage	13	3,643,270	420,922

IM#	Amount	Type	Field IO#	Description	UTM Zone (NAD27)	NORTHING	EASTING
78	1	Chert	77	Debitage	13	3,643,250	421,042
79	1	Chert	02710-Biface	Lithic Tool	13	3,643,250	420,964
80	1	Chert	160	Debitage	13	3,643,200	420,636
81	1	Chert	143	Debitage	13	3,643,170	420,947
82	1	Chert	64	Debitage	13	3,643,140	420,973
83	1	Chert	63	Debitage	13	3,643,130	420,954
84	2	Chert	224	Debitage	13	3,643,120	419,735
85	1	Projectile Point	88	Arrow Point	13	3,643,100	421,570
86	1	Chert	54	Debitage	13	3,643,100	420,885
87	9	Historic	159	Solarized Bottle Fragments	13	3,643,100	420,647
88	3	Chert	225	Debitage	13	3,643,100	419,845
89	1	Chalcedony	87	Debitage	13	3,643,080	421,508
90	1	Chert	223	Debitage	13	3,643,050	419,872
91	6	Various	219	Debitage	13	3,643,030	420,068
92	1	Historic	86	Cairn	13	3,643,020	421,588
93	1	Chert	220	Debitage	13	3,643,020	420,010
94	1	Chert	53	Debitage	13	3,642,990	421,049
95	1	Chert	158	Debitage	13	3,642,990	420,556
96	2	Chert	52	Debitage	13	3,642,930	421,197
97	1	Chert	191	Debitage	13	3,642,930	420,254
98	2	Chert	51	Debitage	13	3,642,920	421,262
99	4	Chert	180	Debitage	13	3,642,920	420,393
100	1	Historic	157	Cobble Alignment at lightning struck tree	13	3,642,880	420,560
101	1	Chert	171	Debitage	13	3,642,860	420,548
102	1	Projectile Point	217	Arrow Point	13	3,642,860	420,259
103	1	Chert	218	Debitage	13	3,642,850	420,221
104	2	Chert	50	Debitage	13	3,642,840	421,300
105	1	Chert	252	Debitage	13	3,642,820	420,411
106	1	Chert	75	Debitage	13	3,642,810	421,564
107	1	Chert	170	Debitage	13	3,642,810	420,600
108	1	Chert	156	Debitage	13	3,642,780	420,723
109	3	Chert	186	Debitage	13	3,642,760	420,388
110	4	Chert	169	Debitage	13	3,642,750	420,712
111	1	Historic	128	Prospect Pit	13	3,642,730	421,860
112	1	Historic	168	Prospect Pit	13	3,642,720	420,722
113	9	Chert	155	Debitage	13	3,642,710	420,803
114	1	Projectile Point	0272-A	Dart Point	13	3,642,710	420,638
115	1	Chert	95	Debitage	13	3,642,700	421,824
116	1	Chert	31	Debitage	13	3,642,680	421,328
117	1	Chert	154	Debitage	13	3,642,680	420,796
118	1	Historic	61	Cairn	13	3,642,660	421,526
119	1	Chert	153	Debitage	13	3,642,660	420,772
120	1	Historic	84	Cairn	13	3,642,630	421,688
121	1	Historic	57	Cairn	13	3,642,630	421,658
122	1	Chert	62	Debitage	13	3,642,620	421,520

IM#	Amount	Type	Field IO#	Description	UTM Zone (NAD27)	NORTHING	EASTING
123	1	Chert	177	Debitage	13	3,642,600	420,703
124	1	Historic	02707-8	Artifact	13	3,642,560	420,870
125	1	Historic	231	Section Marker	13	3,642,560	420,114
126	1	Historic	74	Artifact	13	3,642,540	421,674
127	1	Historic	152	Cairn	13	3,642,510	420,958
128	1	Chert	232	Debitage	13	3,642,510	420,241
129	1	Chert	30	Debitage	13	3,642,490	421,327
130	1	Chert	28	Debitage	13	3,642,480	421,336
131	1	Sandstone	29	Mano	13	3,642,480	421,321
132	2	Chert	179	Debitage	13	3,642,480	420,695
133	1	Shelter	187	Shelter with 1 chert flake	13	3,642,480	420,487
134	1	Historic	85	Artifact	13	3,642,470	421,712
135	2	Chert	151	Debitage	13	3,642,450	421,200
136	2	Chert	150	Debitage	13	3,642,440	421,221
137	1	Historic	142	Prospect Pit	13	3,642,420	421,347
138	1	Chert	85a	Debitage	13	3,642,400	421,772
139	1	Projectile Point	251	Dart Point	13	3,642,340	420,910
140	1	Chert	233	Debitage	13	3,642,340	419,972
141	1	Historic	73	Feature2	13	3,642,320	421,714
142	1	Chert	234	Debitage	13	3,642,320	420,365
143	1	Stone	141	Cobble Alignment	13	3,642,303	421,326
144	1	Chert	72	Debitage	13	3,642,300	421,722
145	1	Chert	26	Debitage	13	3,642,260	421,243
146	9	Chert		Debitage	13	3,642,260	420,704
147	1	Projectile Point	148	Arrow Point	13	3,642,240	421,221
148	2	Chert	167	Debitage	13	3,642,240	421,182
149	4	Chert	49	Debitage	13	3,642,230	421,403
150	3	Chert	47a	Debitage	13	3,642,210	421,412
151	1	Chert	137	Debitage	13	3,642,210	419,730
152	1	Historic	71	Cairn	13	3,642,200	421,891
153	1	Chert	108	Debitage	13	3,642,200	420,015
154	1	Limestone	235	FCR	13	3,642,190	420,673
155	1	Chert		Debitage	13	3,642,180	421,184
156	1	Chert	177	Debitage	13	3,642,180	421,113
157	1	Chert	24	Debitage	13	3,642,170	421,268
158	1	Chert	25	Debitage	13	3,642,160	421,263
159	1	Chert	165	Debitage	13	3,642,160	421,160
160	1	Projectile Point	144	Arrow Point	13	3,642,150	421,928
161	1	Chert	139	Debitage	13	3,642,150	419,731
162	2	Chalcedony	13	Debitage	13	3,642,140	419,752
163	1	Chert	109	Debitage	13	3,642,090	420,510
164	1	Chert	20	Debitage	13	3,642,070	421,547
165	3	Chert	22	Debitage	13	3,642,070	421,493
166	1	Chalcedony	136	Debitage	13	3,642,070	419,803
167	1	Historic	70	Cairn	13	3,642,070	419,802
168	2	Chert	21	Debitage	13	3,642,050	421,518
169	1	Historic	98	Prospect Pit	13	3,642,050	419,838

IM#	Amount	Type	Field IO#	Description	UTM Zone (NAD27)	NORTHING	EASTING
170	1	Historic	140	Prospect Pit	13	3,642,050	419,834
171	1	Chert	107a	Debitage	13	3,642,030	420,124
172	19	Historic	48	Aqua bottle fragments	13	3,642,020	421,733
173	1	Historic	botfin	Bottle Fragment	13	3,642,010	421,449
174	1	Historic	botfin	Bottle Fragment	13	3,642,010	421,449
175	1	Chert	133	Debitage	13	3,642,000	421,413
176	1	Chert	18	Debitage	13	3,641,980	421,670
177	1	Chert	99	Debitage	13	3,641,970	419,949
178	2	Chert	100	Debitage	13	3,641,960	420,022
179	1	Historic	135	Cobble Alignment	13	3,641,940	420,774
180	1	Chert	200	Debitage	13	3,641,730	420,888
181	1	Chert	129	Debitage	13	3,641,711	422,035
182	1	Chert	6	Debitage	13	3,641,700	421,981
183	1	Chert	5	Debitage	13	3,641,670	422,030
184	1	Historic	132	Prospect Pit	13	3,641,650	421,465
185	1	Historic	S16	Cairn	13	3,641,650	421,461
186	1	Historic	115	Prospect Pit	13	3,641,580	422,040
187	10	Limestone	130	FCR	13	3,641,570	421,434
188	1	Historic	10	Cairn	13	3,641,560	421,769
189	1	Historic	S15	Cairn	13	3,641,550	422,002
190	1	Historic	131	Cairn	13	3,641,540	421,463
191	1	Chert		Debitage	13	3,641,410	421,396
192	4	Chert	16	Debitage	13	3,641,400	421,697
193	1	Chert	13	Debitage	13	3,641,370	421,564
194	2	Chert	17	Debitage	13	3,641,310	421,479
195	1	Chert	02686-1	Debitage	13	3,641,220	421,614

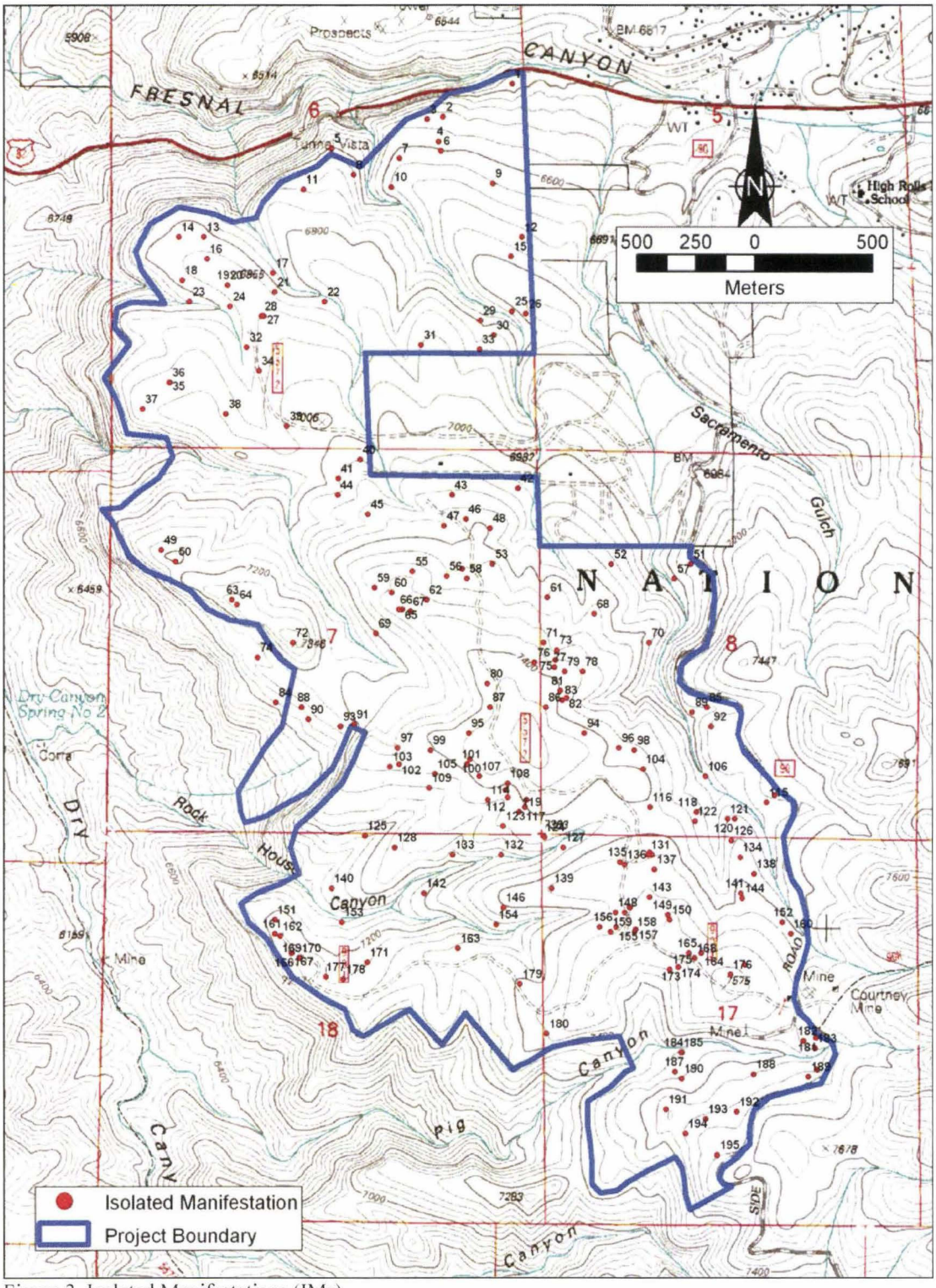

Figure 3. Isolated Manifestations (IMs).

Collections

One collection was made during this project at site AR-03-08-02-689 of an unusual projectile point (Projectile Point A). It was given to Eric Dillingham, who was the point of contact for this project, at his request.

Analytic Methods

This project was primarily a data gathering project, designed to discover and document cultural resources within the project area. Systematic, intensive pedestrian survey was conducted in order to provide thorough coverage. Review of previous findings in the vicinity and in the region contributed to establishing a baseline for pattern recognition in the field. The combined experience of the project archaeologists, totaling over 70 years in the region, contributed to the ability of this team to recognize archaeological materials and landscapes in the project area.

Geographic Information System (GIS) analyses were conducted using field data. Since field locational data was obtained with Global Positioning System technology to sub-meter accuracy, the results when georeferenced to the standard USGS 7.5' contour topographic mapping for the area are extremely accurate. ArcGIS 8.3 was used to manipulate data for overlaying on georeferenced and rectified aerial photography as well as the USGS topographic quadrangle base map. Site boundaries, feature locations, and the project boundary were determined by DGPS and so, again are accurate within one meter.

The array of data derived from this project is detailed and of high quality. When compared to the plotting of sites and project boundaries for projects conducted in the vicinity, there is a clear disjunction in the density of cultural materials observed and

recorded (Charts 1 through 4). Artifact scatters recorded in other projects appear to have been exposed in degrading terrain such as road disturbances and de-vegetated hillslopes. However, it appears that surface terrain in the region may have been recipient of either Aeolian deposition, from windstorms crossing the Tularosa Basin, or perhaps from colluvial deposition from disturbed upslope terrain. Either way, artifact scatters and features may have been buried during periods of denudation and disturbance in the late 19th and early 20th century, and are now subject to exposure. This bias in the discovery of cultural resources in the western Sacramento Mountains may account for the lack of discovery in previous investigations, as noted by Stuart and Gauthier (1981). Geomorphological investigations combined with systematic shovel testing on future survey projects may contribute to an understanding of this phenomenon.

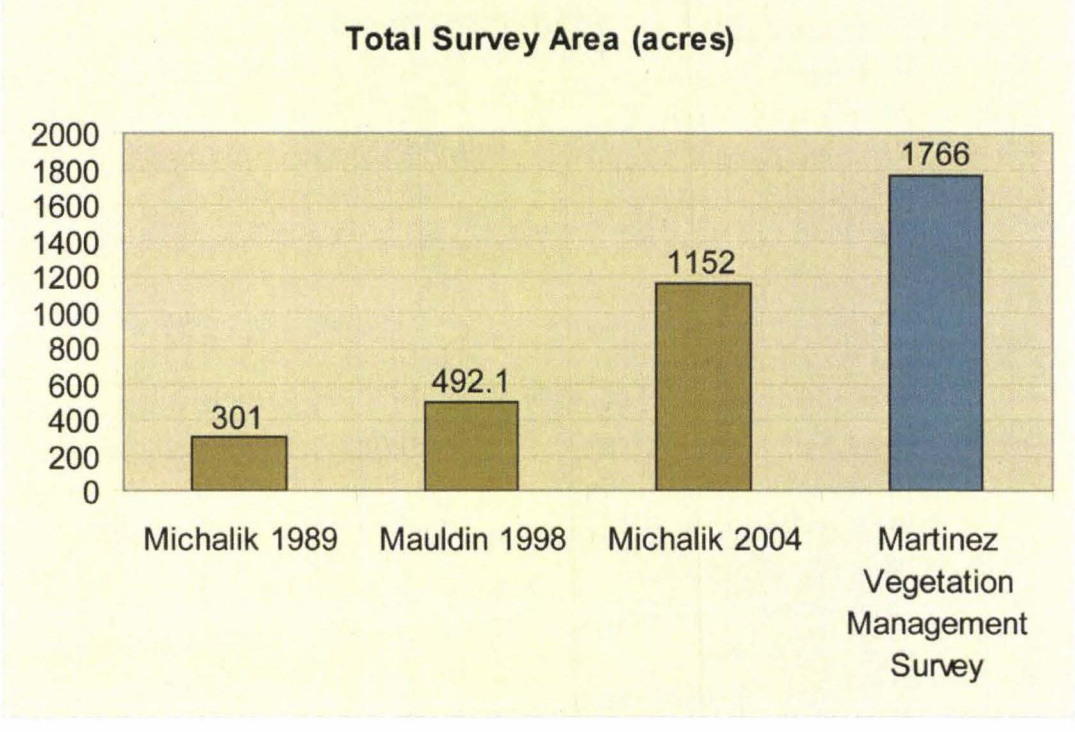

Chart 1. Total area surveyed for past projects in the area compared to that of the current project.

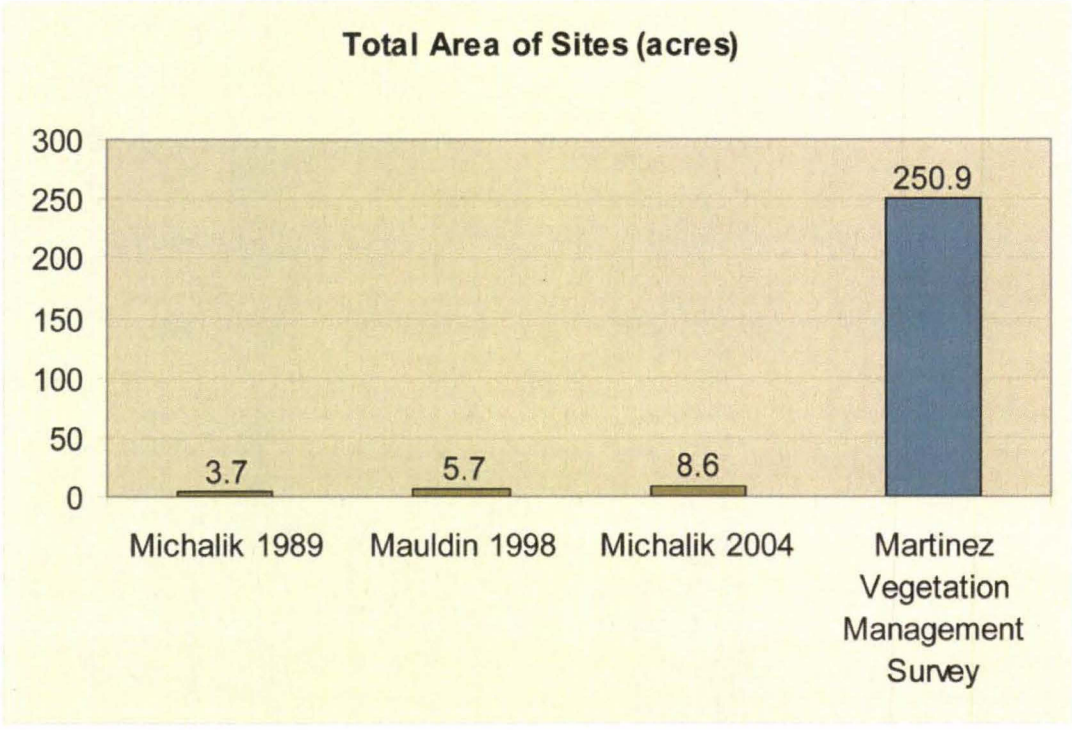

Chart 2. Total area of sites recorded during past projects in the area compared to that of the current project.

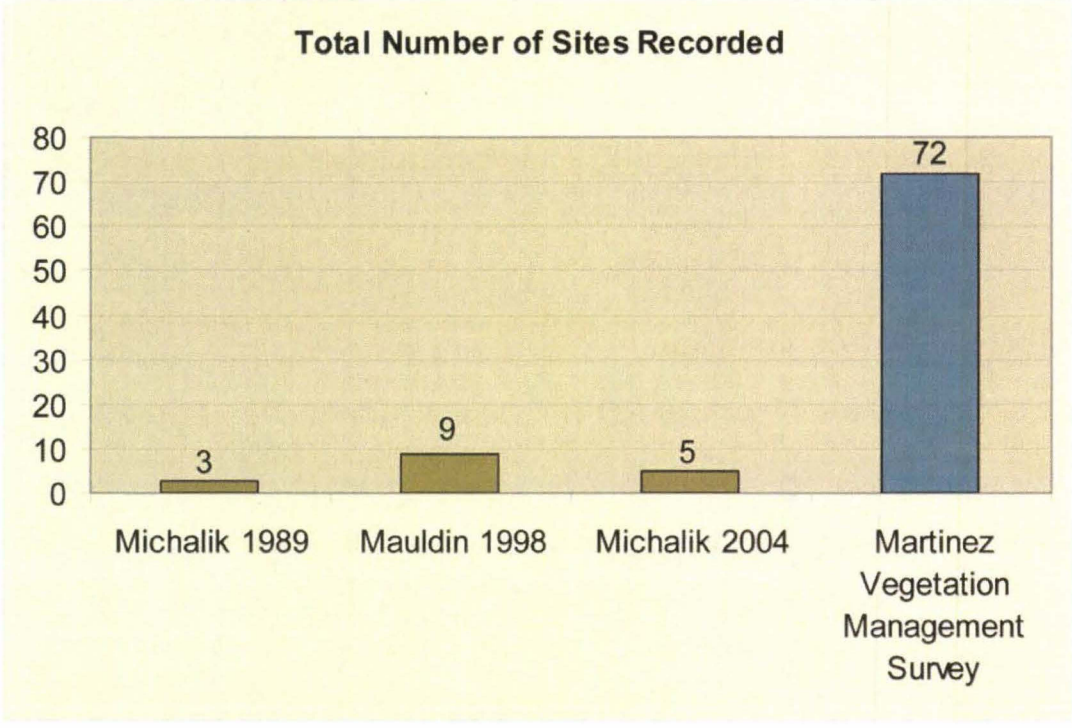

Chart 3. Total number of sites recorded during past projects in the area compared to that of the current project.

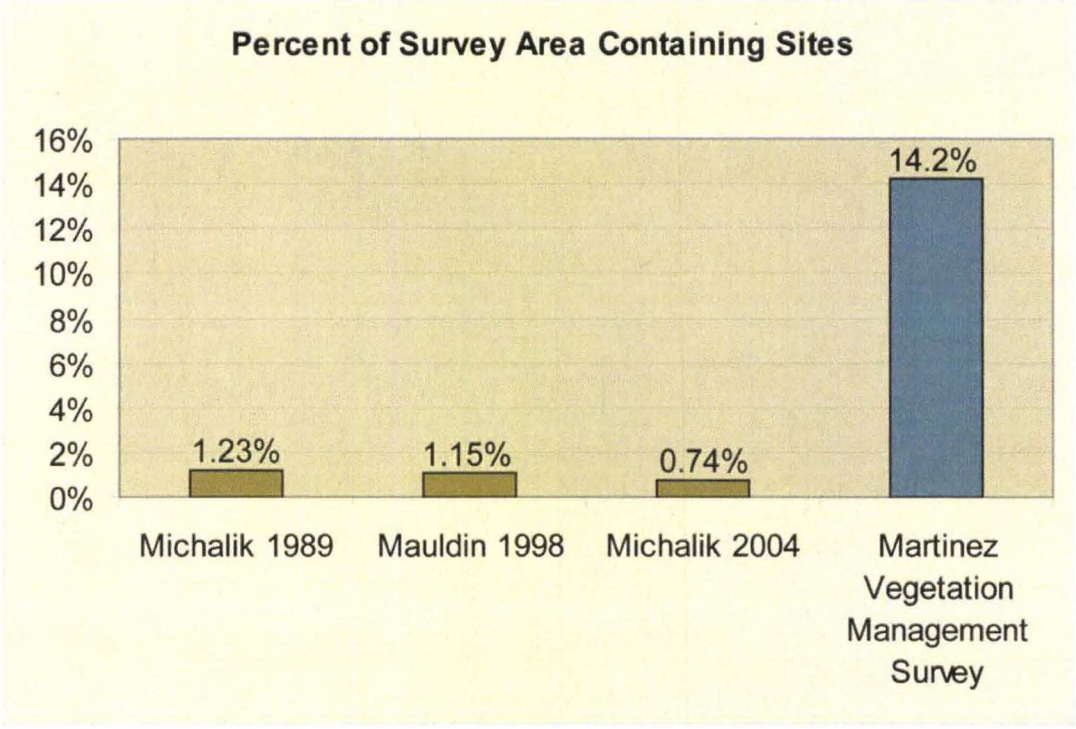

Chart 4. Percentage of surveyed area found to contain sites during past projects in the area compared to that of the current project.

Alternatively, another explanation for the greater density of materials found in the present project is that, indeed, there was a greater focus of settlement in the immediate vicinity of the escarpment rim. The discovery of numerous hearths, extensive artifact scatters, middens and oven sites, as well as possible shelter features, suggests that the area was a node of continuing, even if temporary and ephemeral, occupation. The proximity to Fresnal Canyon, an attractive vector for transit from the desert floor to the high mountains, and the Fresnal Shelter, appealing for sacerdotal use as well as habitation, may contribute to the uniquely high density of cultural resources in this area.

GIS analyses may contribute to consideration of this problem. Entering data into GIS format provides an ongoing comparison of cultural and natural terrain (Table 5 and Figure 4), and of results of projects within the region. Changing vegetation and land use

patterns can be entered and compared with areas of deposition and those where degrading conditions have ensued. Site discovery relative to these factors can be analyzed relative to intensity and criteria for discovery, and field checks of already surveyed areas can be conducted in order to evaluate potential buried sites or exposure in degrading terrain.

Table 5. Site Statistics.

Forest Service Site#	LA#	Area (m2)	Perimeter (m)	Acres	Hectares	Zone	Northing (NAD27)	Easting (NAD27)
AR-03-08-02-718	144777	939.67	134.13	0.232	0.094	13	3,645,670	420,712
AR-03-08-02-759	144778	769.51	156.87	0.190	0.077	13	3,645,530	420,604
AR-03-08-02-756	144779	7,194.57	468.73	1.778	0.719	13	3,645,500	420,374
AR-03-08-02-761	144780	5,150.25	402.21	1.273	0.515	13	3,645,490	420,758
AR-03-08-02-760	144781	181.95	57.88	0.045	0.018	13	3,645,430	420,344
AR-03-08-02-758	144782	769.11	201.08	0.190	0.077	13	3,645,420	420,591
AR-03-08-02-755	144783	473.62	85.60	0.117	0.047	13	3,645,350	419,914
AR-03-08-02-757	144784	123.44	42.30	0.031	0.012	13	3,645,220	420,693
AR-03-08-02-721	144785	741.12	104.79	0.183	0.074	13	3,645,190	420,660
AR-03-08-02-750	144786	460.00	89.32	0.114	0.046	13	3,645,070	419,258
AR-03-08-02-754	144787	143,479.03	1,768.43	35.454	14.348	13	3,645,030	419,958
AR-03-08-02-720	144788	53,406.45	1,704.06	13.197	5.341	13	3,645,030	420,604
AR-03-08-02-749	144789	745.70	108.52	0.184	0.075	13	3,645,000	419,251
AR-03-08-02-751	144790	15,096.93	677.63	3.731	1.510	13	3,645,000	419,389
AR-03-08-02-752	144791	88.39	33.86	0.022	0.009	13	3,644,760	419,645
AR-03-08-02-748	144792	629.21	98.04	0.155	0.063	13	3,644,660	419,235
AR-03-08-02-753	144793	154.82	48.43	0.038	0.015	13	3,644,660	419,722
AR-03-08-02-747	144794	658.75	98.69	0.163	0.066	13	3,644,640	419,431
AR-03-08-02-746	144795	367.60	87.15	0.091	0.037	13	3,644,560	419,340
AR-03-08-02-743	144796	381.31	104.37	0.094	0.038	13	3,644,530	420,099
AR-03-08-02-745	144797	13,347.70	473.33	3.298	1.335	13	3,644,390	419,396
AR-03-08-02-744	144798	1,072.05	143.23	0.265	0.107	13	3,644,280	419,477
AR-03-08-02-717	144799	108,784.76	2,573.78	26.881	10.878	13	3,644,240	419,838
AR-03-08-02-716	144800	251.67	63.60	0.062	0.025	13	3,643,870	420,465
AR-03-08-02-742	144801	331.84	73.95	0.082	0.033	13	3,643,820	419,659
AR-03-08-02-715	144802	1,613.49	200.17	0.399	0.161	13	3,643,810	420,586
AR-03-08-02-712	144803	2,996.15	293.03	0.740	0.300	13	3,643,710	420,568
AR-03-08-02-741	144804	1,630.87	183.73	0.403	0.163	13	3,643,690	419,344
AR-03-08-02-714	144805	142.03	44.74	0.035	0.014	13	3,643,650	420,313
AR-03-08-02-713	144806	1,303.86	186.47	0.322	0.130	13	3,643,590	420,269
AR-03-08-02-740	144807	791.49	145.02	0.196	0.079	13	3,643,500	419,622
AR-03-08-02-711	144808	1,904.95	178.75	0.471	0.190	13	3,643,260	421,167
AR-03-08-02-710	144809	2,098.33	203.15	0.519	0.210	13	3,643,230	420,994
AR-03-08-02-719	144810	148,747.46	1,931.13	36.756	14.875	13	3,643,200	420,106
AR-03-08-02-738	144811	1,255.75	146.18	0.310	0.126	13	3,643,050	419,775
AR-03-08-02-709	144812	95,566.14	1,918.38	23.615	9.557	13	3,643,020	420,768
AR-03-08-02-739	144813	1,017.28	128.94	0.251	0.102	13	3,642,980	419,922

Forest Service Site#	LA#	Area (m2)	Perimeter (m)	Acres	Hectares	Zone	Northing (NAD27)	Easting (NAD27)
AR-03-08-02-734	144814	8,785.74	445.69	2.171	0.879	13	3,642,920	420,464
AR-03-08-02-735	144815	4,281.48	243.09	1.058	0.428	13	3,642,910	420,322
AR-03-08-02-684	144816	5,226.09	408.77	1.291	0.523	13	3,642,870	421,654
AR-03-08-02-736	144817	15,448.21	547.20	3.817	1.545	13	3,642,850	420,141
AR-03-08-02-733	144818	1,091.14	146.49	0.270	0.109	13	3,642,730	420,416
AR-03-08-02-737	144819	1,556.51	193.96	0.385	0.156	13	3,642,720	420,132
AR-03-08-02-708	144820	123,745.84	2,238.94	30.578	12.375	13	3,642,690	421,095
AR-03-08-02-727	144821	8,356.46	419.13	2.065	0.836	13	3,642,680	420,608
AR-03-08-02-726	144822	6,753.29	352.34	1.669	0.675	13	3,642,600	420,426
AR-03-08-02-725	144823	632.31	100.12	0.156	0.063	13	3,642,470	420,406
AR-03-08-02-702	144824	751.91	107.70	0.186	0.075	13	3,642,390	421,367
AR-03-08-02-701	144825	21,228.89	865.03	5.246	2.123	13	3,642,350	421,137
AR-03-08-02-724	144826	101.40	36.90	0.025	0.010	13	3,642,340	420,117
AR-03-08-02-722	144827	2,110.37	173.47	0.521	0.211	13	3,642,300	420,700
AR-03-08-02-723	144828	229.24	55.47	0.057	0.023	13	3,642,240	420,320
AR-03-08-02-700	144829	418.11	83.71	0.103	0.042	13	3,642,180	419,737
AR-03-08-02-682	144830	2,122.30	226.99	0.524	0.212	13	3,642,110	421,358
AR-03-08-02-681	144831	2,122.55	203.00	0.524	0.212	13	3,642,040	421,470
AR-03-08-02-699	144832	985.41	126.48	0.243	0.099	13	3,642,030	419,889
AR-03-08-02-683	144834	53,449.35	1,458.54	13.208	5.345	13	3,642,030	421,120
AR-03-08-02-695	144835	36,445.12	883.57	9.006	3.645	13	3,641,990	420,512
AR-03-08-02-696	144836	2,495.45	232.70	0.617	0.250	13	3,641,960	420,249
AR-03-08-02-694	144837	166.04	53.30	0.041	0.017	13	3,641,950	420,813
AR-03-08-02-698	144838	4,321.63	306.98	1.068	0.432	13	3,641,940	419,926
AR-03-08-02-690	144939	5,506.62	317.70	1.361	0.551	13	3,641,850	421,530
AR-03-08-02-668	72637	33,501.63	1,089.86	8.278	3.350	13	3,641,840	421,810
AR-03-08-02-697	144840	1,952.43	220.23	0.482	0.195	13	3,641,830	420,085
AR-03-08-02-693	144841	9,755.70	548.23	2.411	0.976	13	3,641,830	420,880
AR-03-08-02-692	144842	256.36	60.83	0.063	0.026	13	3,641,790	421,007
AR-03-08-02-691	144843	1,355.06	138.93	0.335	0.136	13	3,641,700	421,762
AR-03-08-02-689	144844	2,887.47	284.81	0.714	0.289	13	3,641,570	421,527
AR-03-08-02-688	144845	11,467.52	482.01	2.834	1.147	13	3,641,380	421,254
AR-03-08-02-687	144846	5,509.17	364.70	1.361	0.551	13	3,641,360	421,452
AR-03-08-02-686	144847	20,021.14	689.85	4.947	2.002	13	3,641,310	421,622
AR-03-08-02-685	144848	5,461.18	347.74	1.349	0.546	13	3,641,190	421,536

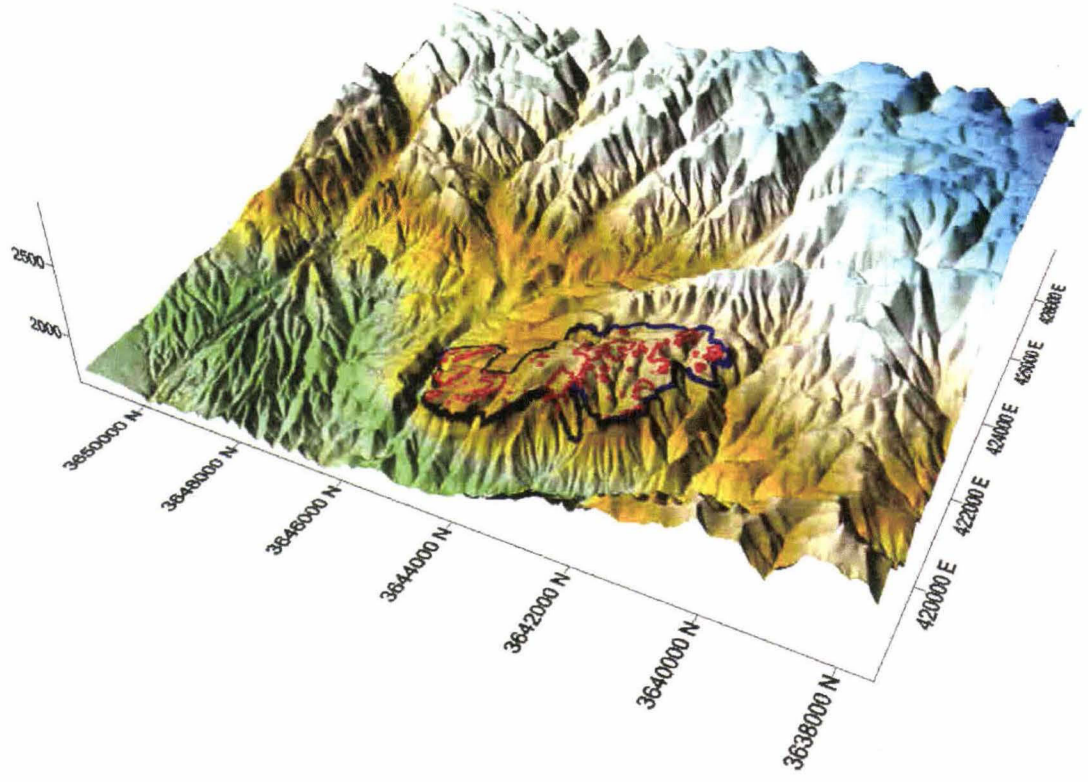

Figure 4. Three dimensional model of project area with sites.

Data Synthesis

The Martinez Vegetation Management Archaeological Survey Project has provided extraordinary data that have great potential for understanding the settlement and subsistence practices of indigenous peoples in the Sacramento Mountains of south central New Mexico. The project area is situated uniquely above the dramatic escarpment of the eastern Sacramento plateau overlooking the Tularosa Bolson and White Sands. A relatively level bench from the steep escarpment rim extends east and into slightly higher terrain over a mile in most places. To the north the narrow, deep and rugged Fresnal Canyon cuts a gorge linking the Bolson below with the higher conifer forests of the Sacramento Mountains, and connects the various and diverse life zones from the desert

floor through woodland to forest environments. In this locality, where the block-faulted Sacramentos break and erode out to the west, there are numerous outcrops of high quality black, white and gray cherts as well as chalcedony abundantly dispersed on the surface of the ground.

The project area is in an ecotonal zone where desert vegetation is interspersed with woodland species. Oak, piñon, juniper, and, rarely, Ponderosa, identify this as the transition zone. Wills (1989) and others have demonstrated the productivity and diversity of this zone that once, during favorable climatic regimes in the middle and late Archaic periods sponsored its extensive range over much of southern New Mexico in the 6,000 to 7,000 ft asml zone. Much of the grassland plains of central and parts of southern New Mexico were in this elevational range, and so this highly habitable terrain was much greater in area during the mid-Holocene than now. The availability of piñon mast, abundant game, and a great diversity of forbs and succulents in this rich and diverse mosaic habitat was the preferred habitat for human occupation. It supported population expansion and apparently also an increase in the rate of population growth. At least this is suggested by the proliferation of middle and late Archaic period sites that have been recorded in the region as well as the apparent shifts in lifeway that suggest an expansion of subsistence practices to include horticulture and very sophisticated manipulation of the landscape.

The project area is uniquely situated to have participated in settlement systems from all periods of known antiquity in the region. During Paleoindian periods, the 6,000 to 7,000 ft asml elevational zone would have likely been forested with Ponderosa and would have been at the upper limits of the transitional zone from woodland to forest

environment. Its commanding view, proximity to a transit vector in Fresnal Canyon, nearness of the massive rock shelters that have demonstrated long term use from Paleoindian to recent occupation, all support its appeal for settlement. Discovery of Bajada, Late Paleoindian or San Jose, projectile points on site LA144844 (02-689) and Bajada, Lerma and Dalton projectile points on site LA 144815 (02-735) demonstrate the *longue durée* of settlement on the escarpment rim (Figures 5 through 7). These two sites, interestingly, are both situated slightly below the ridge lines and sheltered somewhat from the more intense wind and weather at the escarpment edge. They are in the southern portion of the project area, and consist of extensive lithic scatters, with fire-cracked rock concentrations on LA144844 (02-689) that were likely hearths.

Figure 5. Assorted artifacts from project area.

Figure 6. Assorted artifacts from project area.

Figure 7. Assorted artifacts from project area.

Middle and Late Archaic settlement in the zone is abundantly evident from the large number of San Jose and San Pedro style projectile points found on the project area. There doesn't appear to be any obvious patterning to these discoveries except to note that they are coextensive over the project area, and are associated with features ranging from burned rock middens, hearths, cobble alignments, and pithouses (as at 02-686). Pithouse period occupance of the area is demonstrated by this latter site, where El Paso brownware ceramics were found, as well as the discovery of El Paso brownware sherds at site LA144817 (02-736) that also had burned rock midden features. Site LA144798 (02-744) had one El Paso brownware sherd along with four burned rock midden features. Later Puebloan period occupation is demonstrated by the discovery of Lincoln Black-on-red and Chupadero Black-on-white ceramics on site LA144822 (02-726) along with five burned rock midden features; and Chupadero Black-on-white ceramics on site LA144844 (02-689). These sites area also located on the hillslopes below the ridge tops. Given that they all are associated with burned rock midden features, it is likely that these were succulent procurement areas. Even today Agave and other succulents favor these slopes and grow in areas where middens with diagnostic materials spanning 10,000 years were found during this survey. Diagnostic projectile points and ceramic sherds were also recorded as isolates that, as discussed above concerning Paleoindian occupance, demonstrates the ubiquity of datable cultural materials and the extraordinary span of settlement periods throughout the project area.

Why was this area so unique? Why have nearly 10% of the sites in the vast Sacramento District of the Lincoln National Forest been recorded in this 1766 acre project area? As discussed earlier in this report, there may be geomorphic explanations

of site burial and exposure in this terrain. Similar density of sites may be thinly buried under colluvial and eolian deposits higher and further upslope and to the east from the project area. Where degradation from historic impacts such as roads and mine pits has exposed surfaces, there have been a few sites recorded in previous investigations in these contexts. Otherwise, there have been virtually no sites recorded in terrain that is very similar to that in the project area. Has it been buried under as yet undegraded terrain?

Erosion in the Martinez Vegetation Management Project area is undoubtedly less pronounced than in the La Luz Vegetation Management Project area higher in elevation. Deposition in the Martinez area appears to have been greater than in the La Luz area, and these factors, deposition and degradation, have contributed to site formation and altered boundaries of sites. In addition, the lithology of the Martinez area is markedly different than higher or lower elevation terrain, in that underlying local limestone has undergone silification that has been exposed in the project area. This provides the additional magnet in the project area of an easily gathered, high quality lithic resource.

Alternatively, are these sites a unique cluster of settlement in an ecotonal zone with excellent view, accessibility, and diverse resource availability that attracted settlement for over 10,000 years? If this is the case, then this area, along with Fresnal Shelter and other sites as yet undocumented in the hinterland of the shelter, may preserve an archaeological and cultural landscape *par excellence* in the region.

Site Typology

Data from this project constitutes only the first inventory level of knowledge of deposits at sites in the project area. Nonetheless, there is already a considerable body of data supporting the range of chronological settlement, and the repetitive use for succulent

harvest, camping and lithic procurement. Much more effort will be required to properly evaluate each site, to assess the potential for subsurface discovery in sites and in intersite terrain, and to do intensive point provenience mapping of surface artifacts and features. In the meantime, a crude first pass at constructing a site typology may contribute to a preliminary understanding of the sites and also provide a framework for National Register evaluation.

Isolated manifestations, by definition, are lower density discoveries of cultural materials, but during this project consisted of a broad range of lithic materials and expedient as well as diagnostic tools, and a few ceramic sherds. In themselves they do not constitute sites, but, given the potential for further discovery of subsurface sites in the area, they should be noted and, especially in concentrated areas, should be probed to assess the potential for subsurface deposits.

The most obvious distinction is between sites with features and those that are strictly artifact scatters. Features on sites include burned rock middens, hearths, rock and cobble alignments, cairns, depressions; during historical period occupation mine shafts, trash dumps, cairns, and survey markers are also sometimes found. In all cases the historical period features were additional components recorded on multicomponent sites.

The following sites are those with features and artifact scatters that were found in the project area. They are grouped by period where that information was available in the form of diagnostic projectile points or ceramic sherds.

Sites with Features – Paleoindian Period

LA144844 (02-689)

Sites with Features – Archaic Period

LA144847 (02-686)

Sites with Features – Pithouse Period

LA144798 (02-744) and 144817 (02-736)

Sites with Features – Puebloan Period

LA144822 (02-726) and 144844 (02-689)

Sites with Features – No Diagnostic Artifacts – Periods Unknown

144780 (02-761), 144787 (02-754), 144788 (02-720), 144790 (02-751), 144792 (02-748), 144793 (02-753), 144796 (02-743), 144797 (02-745), 144798 (02-744), 144799 (02-717), 144804 (02-741), 144805 (02-714), 144806 (02-713), 144808 (02-711), 144809 (02-710), 144810 (02-719), 144814 (02-734), 144816 (02-684), 144817 (02-736), 144818 (02-733), 144819 (02-737), 144820 (02-708), 144821 (02-727), 144822 (02-726), 144823 (02-725), 144824 (02-702), 144825 (02-701), 144826 (02-724), 144827 (02-722), 144828 (02-723), 144829 (02-700), 144830 (02-682), 144831 (02-681), 144832 (02-699), 144833 (02-683), 144834 (02-695), 144835 (02-696), 144836 (02-698), 144838 (02-697), 144840 (02-693), 144841 (02-691), 144843 (02-688), 144845 (02-688), and 144846 (02-687)

Sites without Features – Paleoindian Period

LA144815 (02-735)

Sites without Features – No Diagnostic Artifacts – Unknown Period

144777 (02-718), 144778 (02-759), 144779 (02-756), 144781 (02-760), 144782 (02-758), 144783 (02-755), 144784 (02-757), 144785 (02-721), 144786 (02-750), 144789 (02-749), 144791 (02-752), 144794 (02-747), 144795 (02-746), 144800 (02-716), 144801 (02-742), 144802 (02-715), 144803 (02-712), 144807 (02-740), 144811 (02-738), 144813 (02-739), 144815 (02-735), 144830 (02-682), 144837 (02-694), 144839 (02-690), 144842 (02-692), and 144848 (02-685)

The latter category, sites with artifact scatters, are all lithic scatters with a wide diversity of black, gray and white cherts and chalcedonies as well as a small proportion of obsidian and exotic cherts present. These sites are in terrain where there could be buried materials including even possibly features. Additional evaluation investigations will be necessary to recover potentially diagnostic material such as artifacts and radiocarbon

samples for radiocarbon age determination. At present, insufficient is known about nearly all of these sites to dismiss the potential for further subsurface discovery or even surface materials that might be found in intensive point-provenience mapping of the sites.

Management Information and Recommendations

The sites in this project are part of a remarkable assemblage of sites in a unique geographical setting along the top of the western escarpment of the Sacramento Mountains. Site density is high in the project area in contrast to the very low rate of discovery of sites in the surrounding mile, and, indeed, in the entire Sacramento District of the Lincoln National Forest. Site preservation is generally excellent, as the sites appear to have been buried under shallow eolian and colluvial deposits during the late 19th and early 20th centuries.

All sites in the project area, except 02-682 (LA144830), 02-694 (LA144837), 02-721 (LA144785), 02-752 (LA144791), and 02-757 (LA144784) are recommended as eligible for listing on the National Register of Historic Places pursuant to Section 106 of the National Historic Preservation Act, 1966, as amended. These sites do not appear to be intact. They are all small lithic scatters on degraded terrain. They were completely recorded during the present project and do not appear to have any further potential to contribute data toward understanding past settlement or for the prehistory of the region.

All other sites are recommended as eligible for listing as they have intact deposits with significant data that can contribute to our understanding of the previous settlement in the region. Our present knowledge of the sites is insufficient to determine whether there may be intact subsurface deposits that may require further testing and evaluation,

but the exposed surface assemblages in all cases are sufficient to justify listing as individual sites.

Because of the apparently unique setting (or, alternatively, inadequate discovery or documentation) of sites in the study region a long-term goal may be to consider this area as eligible for listing as a National Register District. The boundaries for such a District might include Fresnal Shelter and Fresnal Canyon to the north, and extend sufficiently to the east and south to incorporate any areas of known site discovery during previous investigations. The theme of the District could focus on the deep history of settlement in the vicinity of floral, geographic, shelter, and transit vector resources that appear to have made this a highly favorable ecotonal settlement node between the desert floor and the high elevation forests of the Sacramento Mountains.

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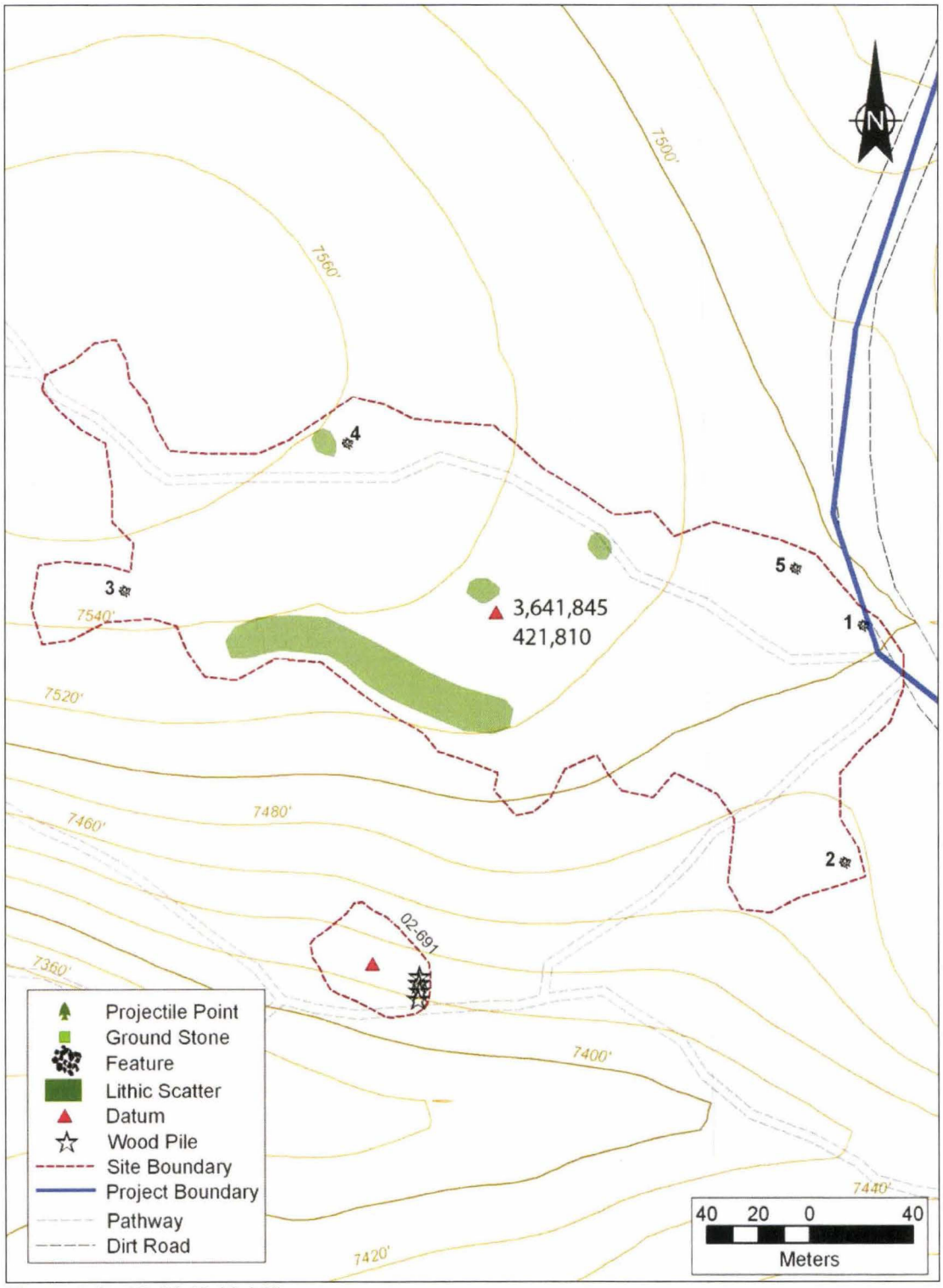
APPENDIX A – GIS SITE MAPS



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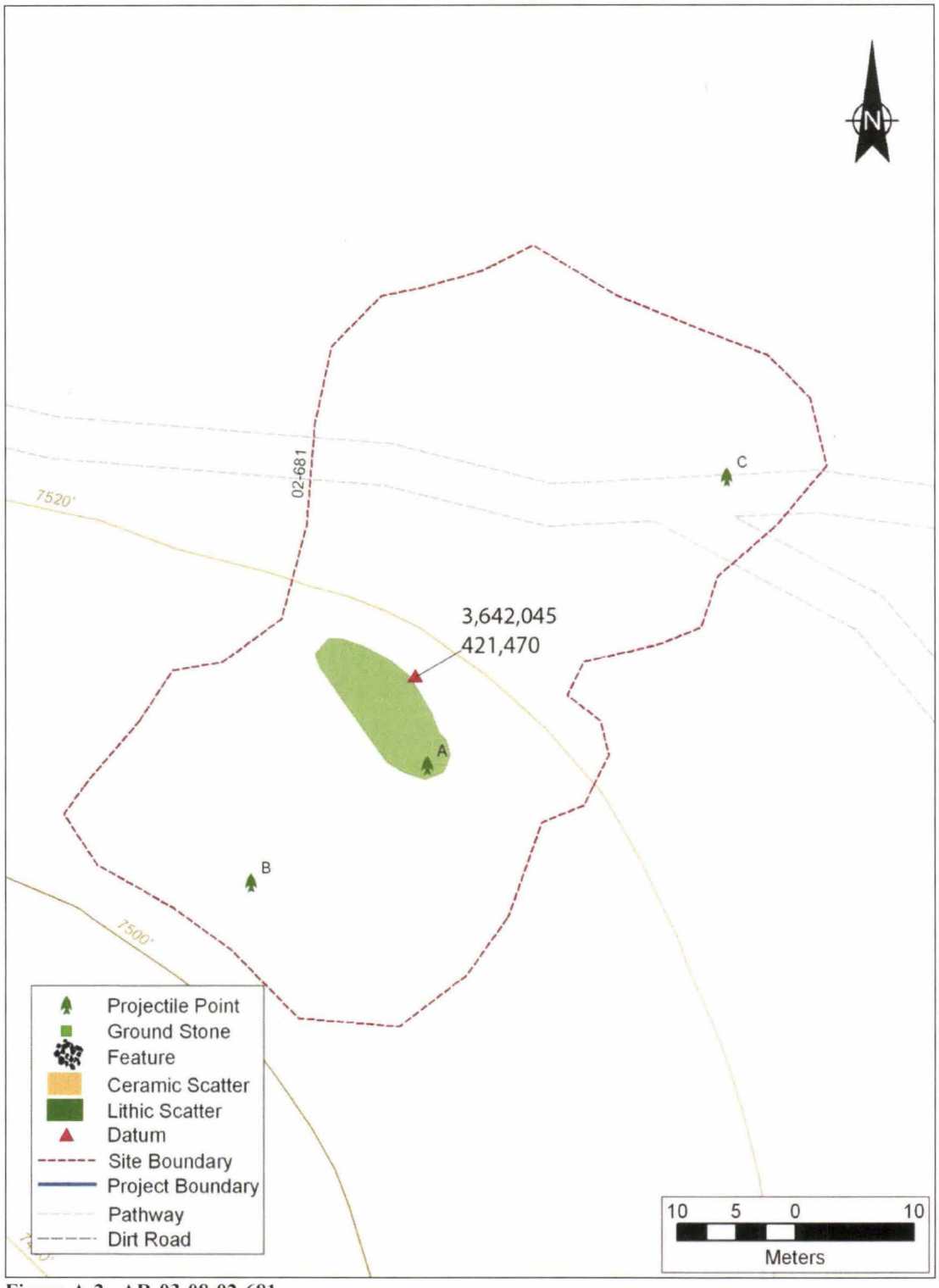

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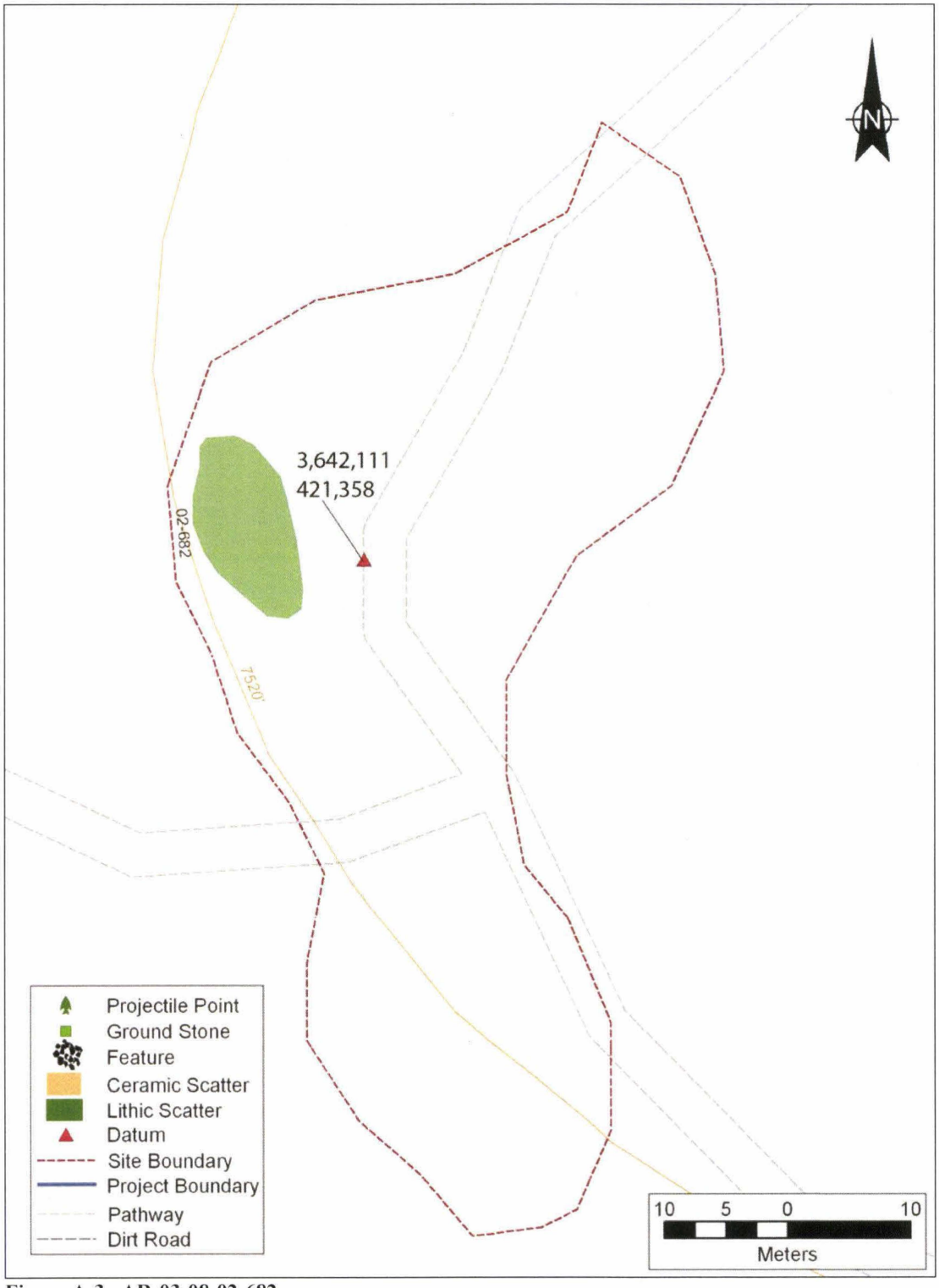

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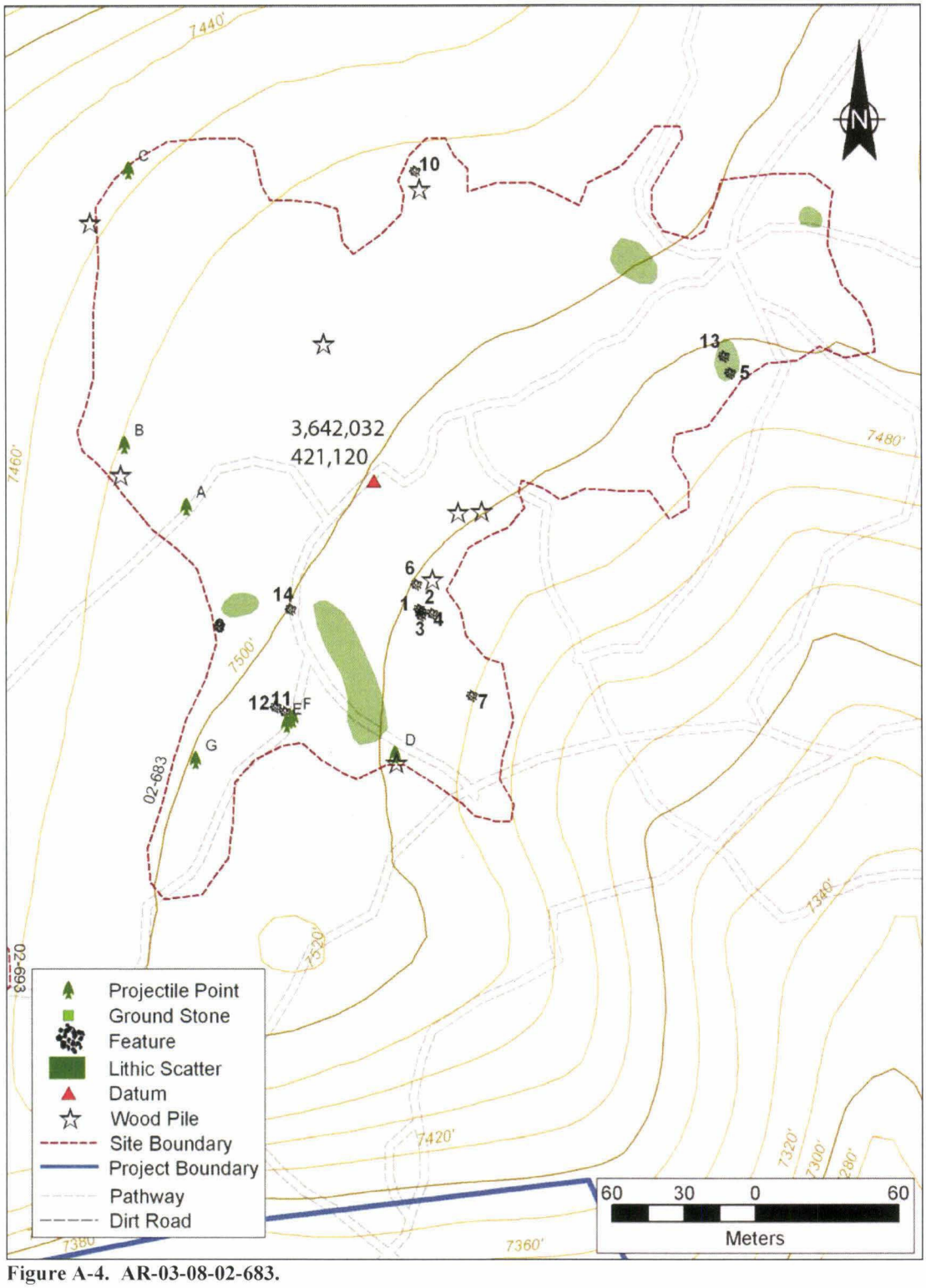

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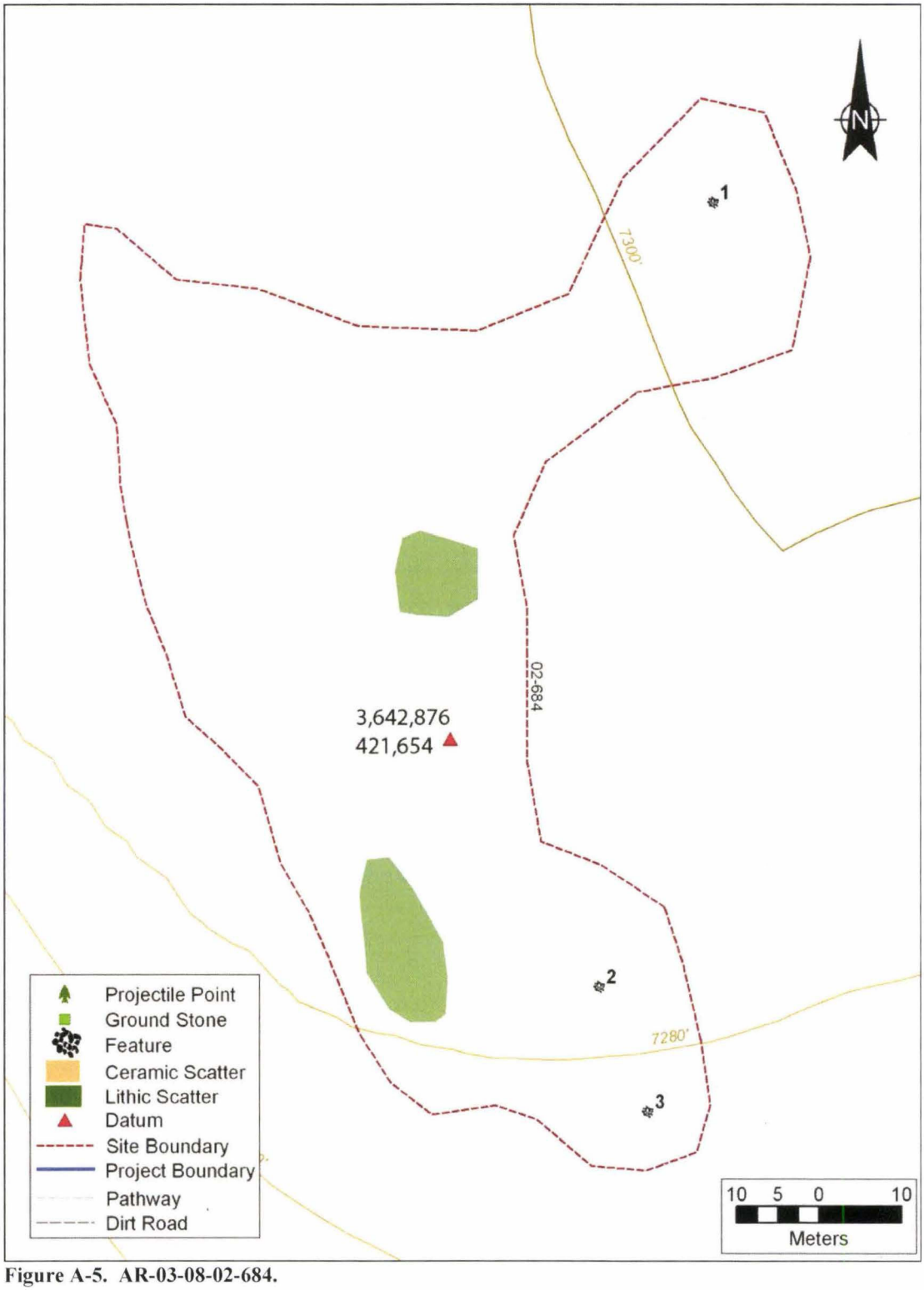

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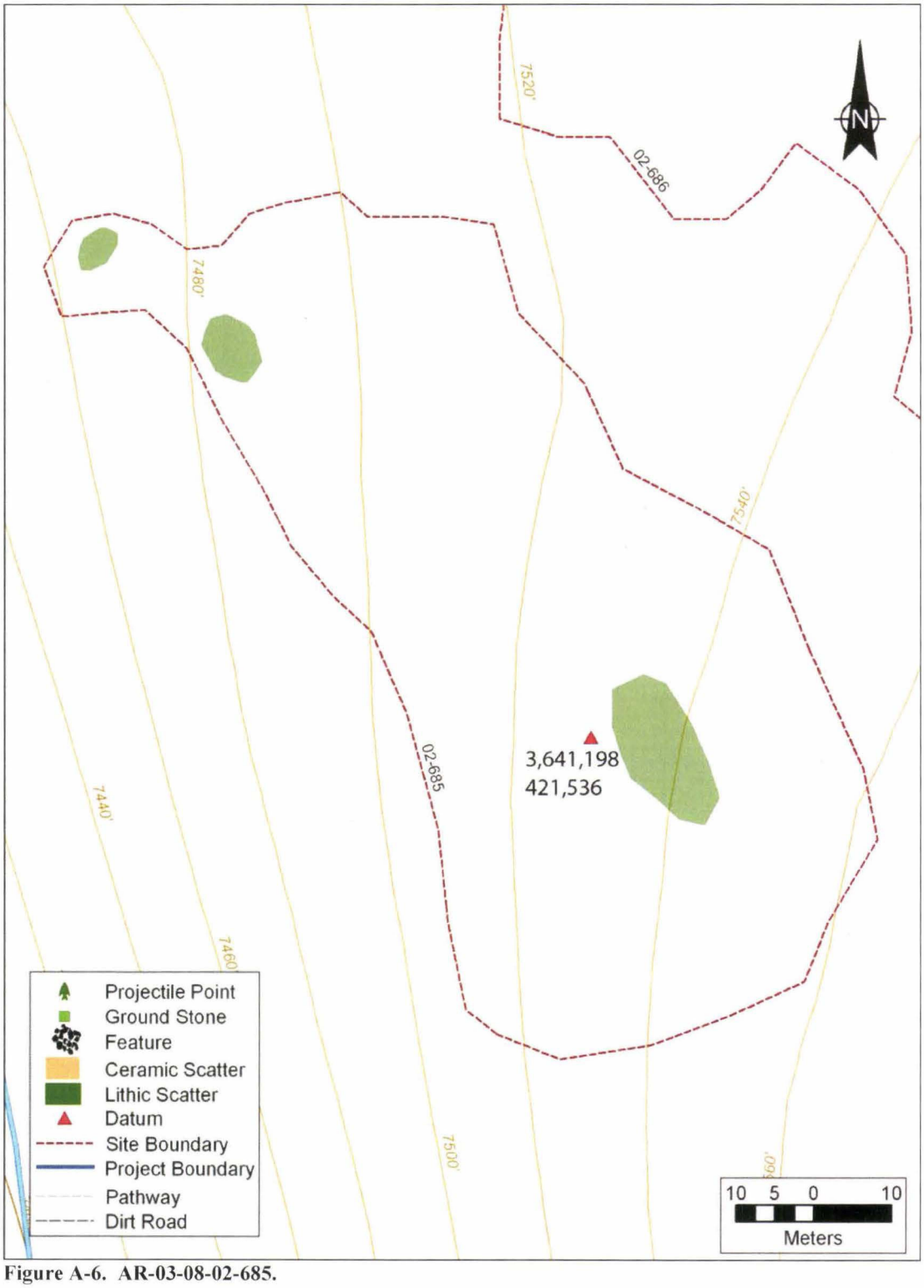

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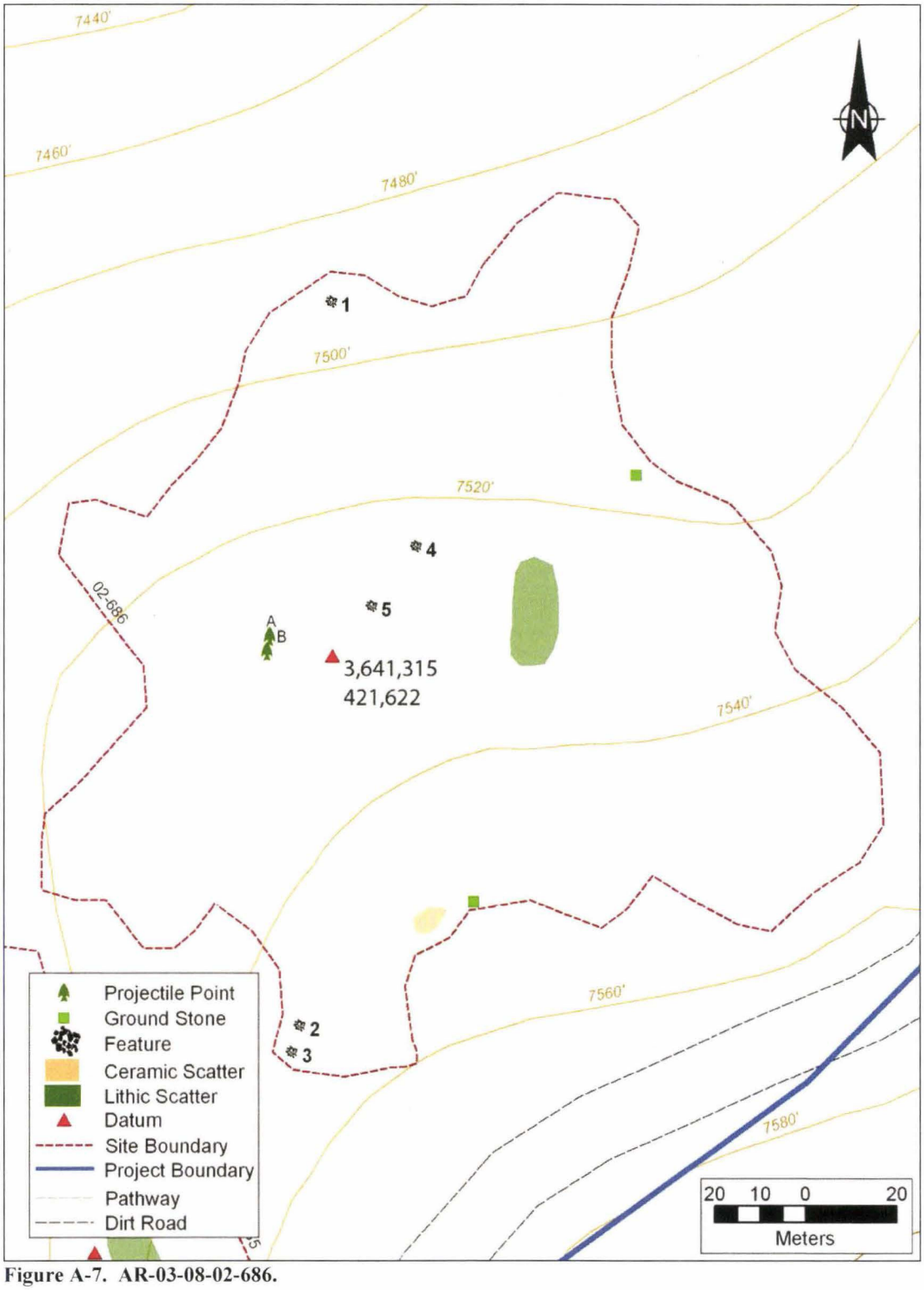

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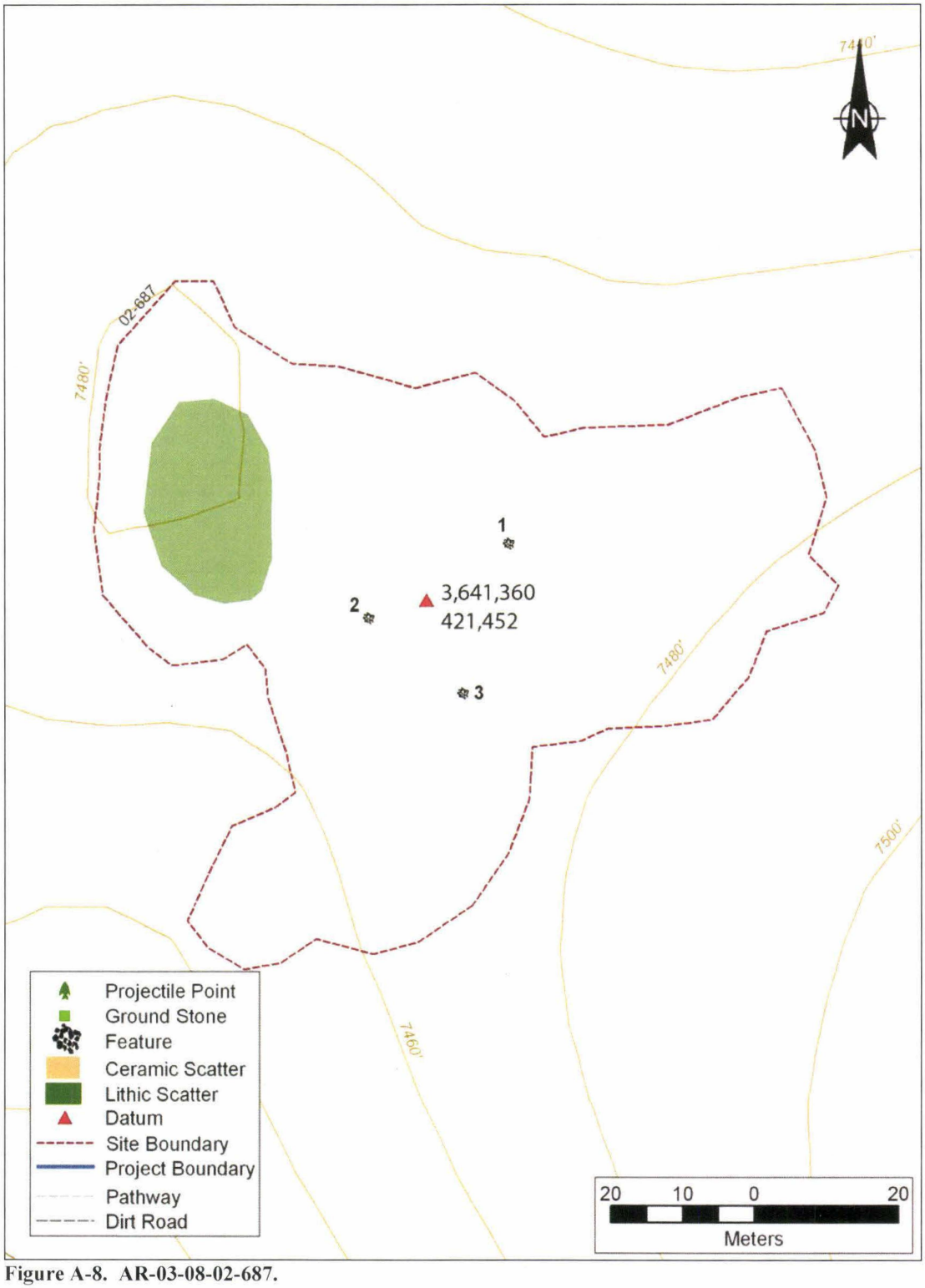

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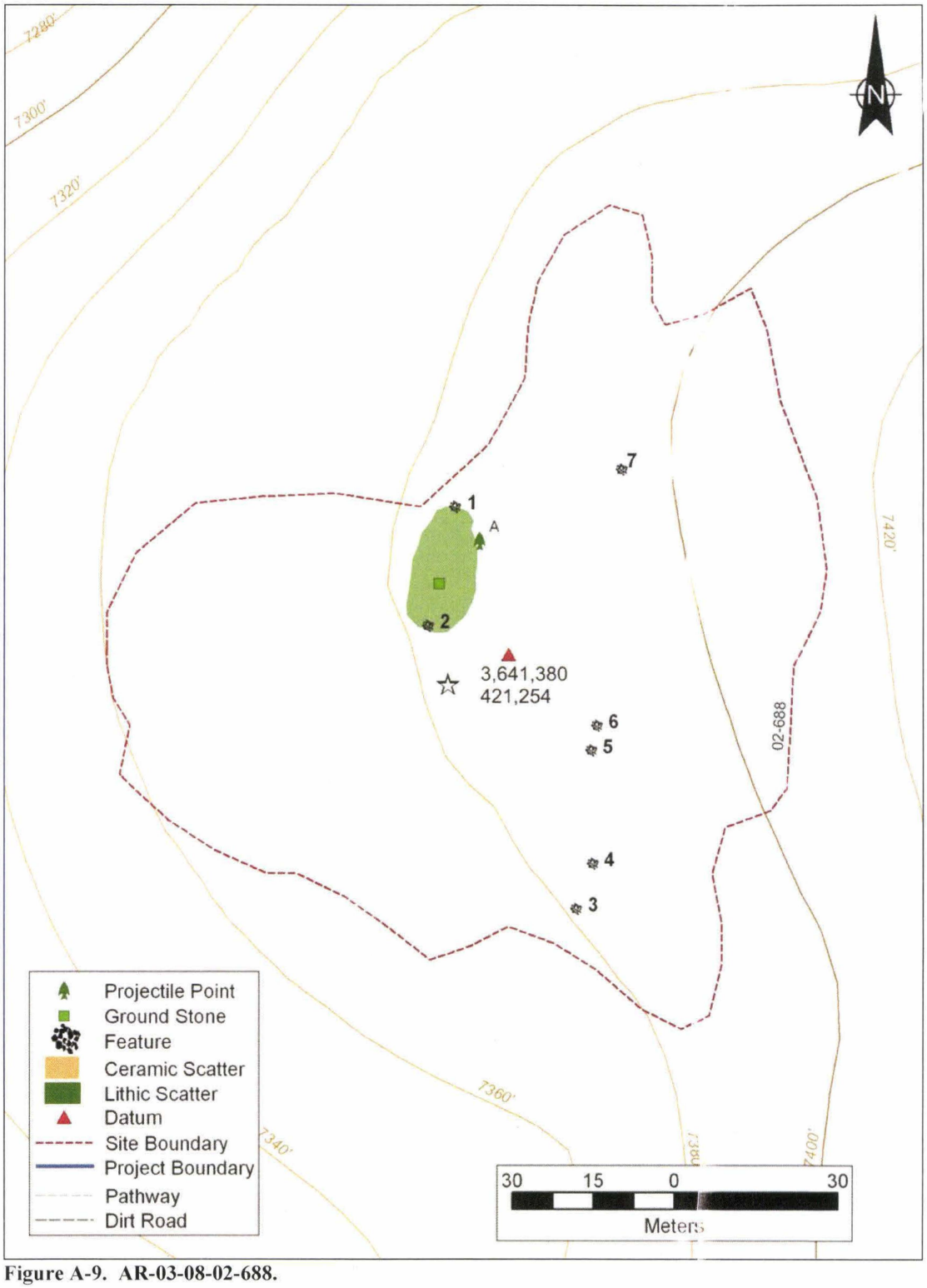

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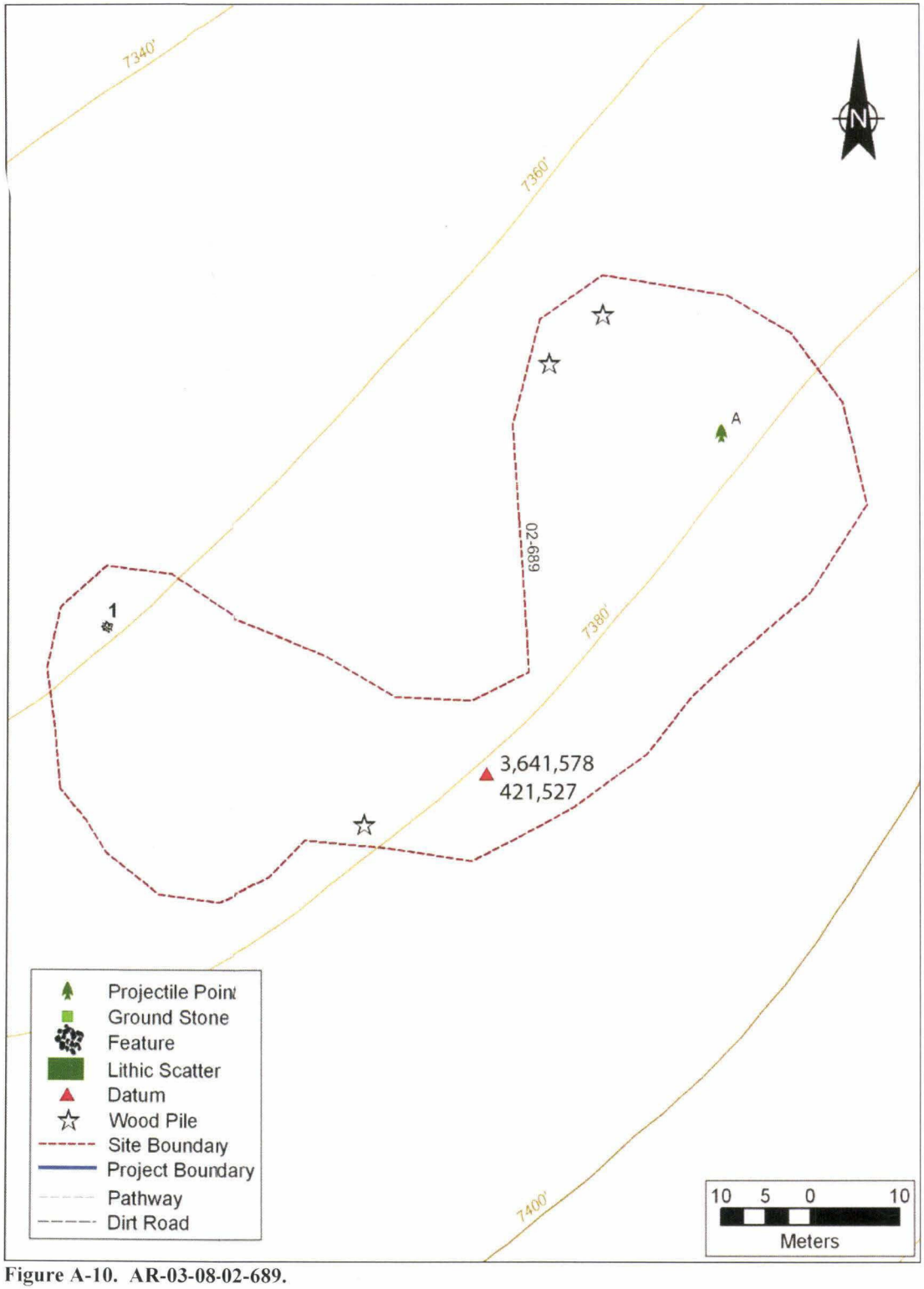

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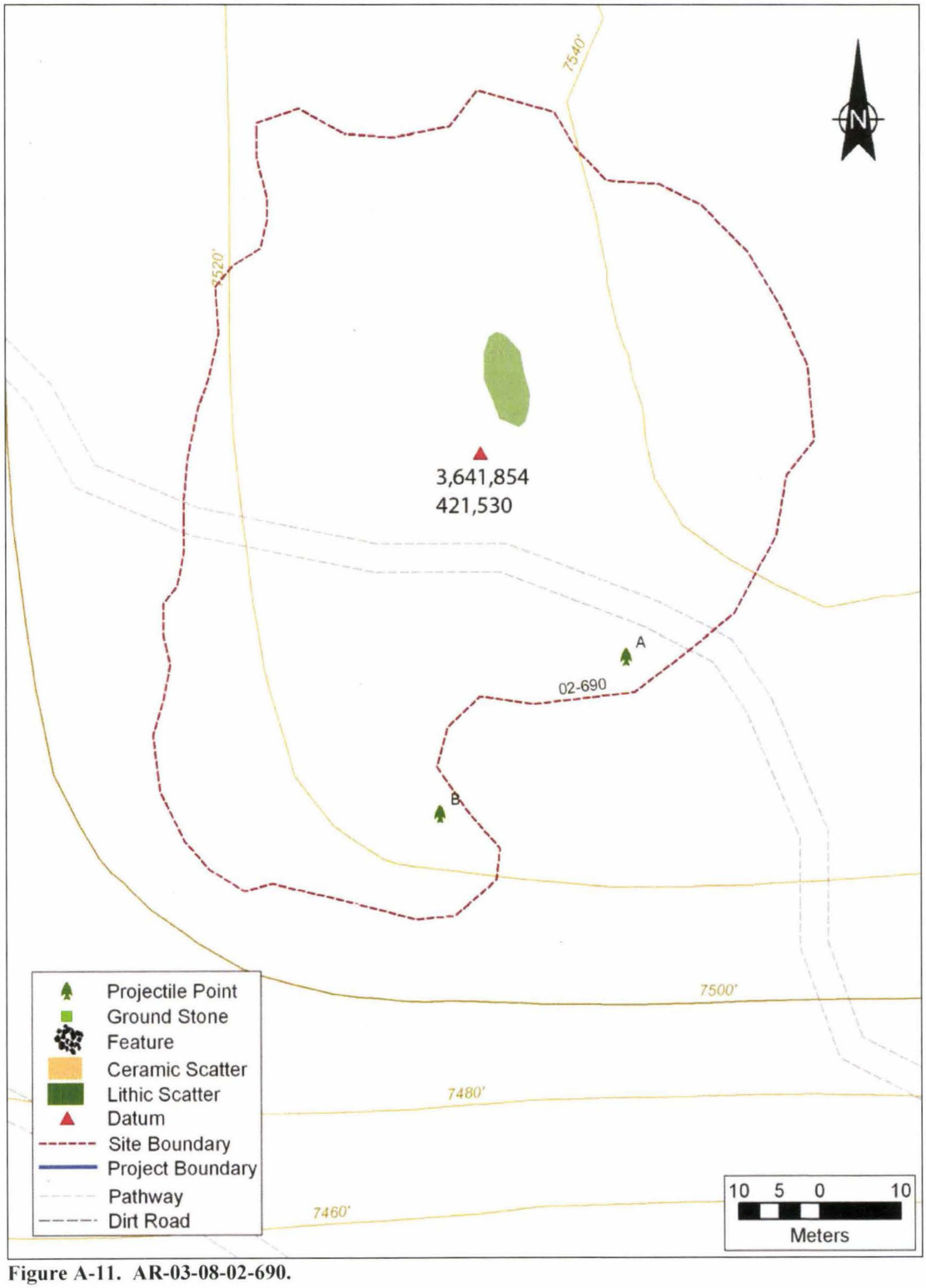

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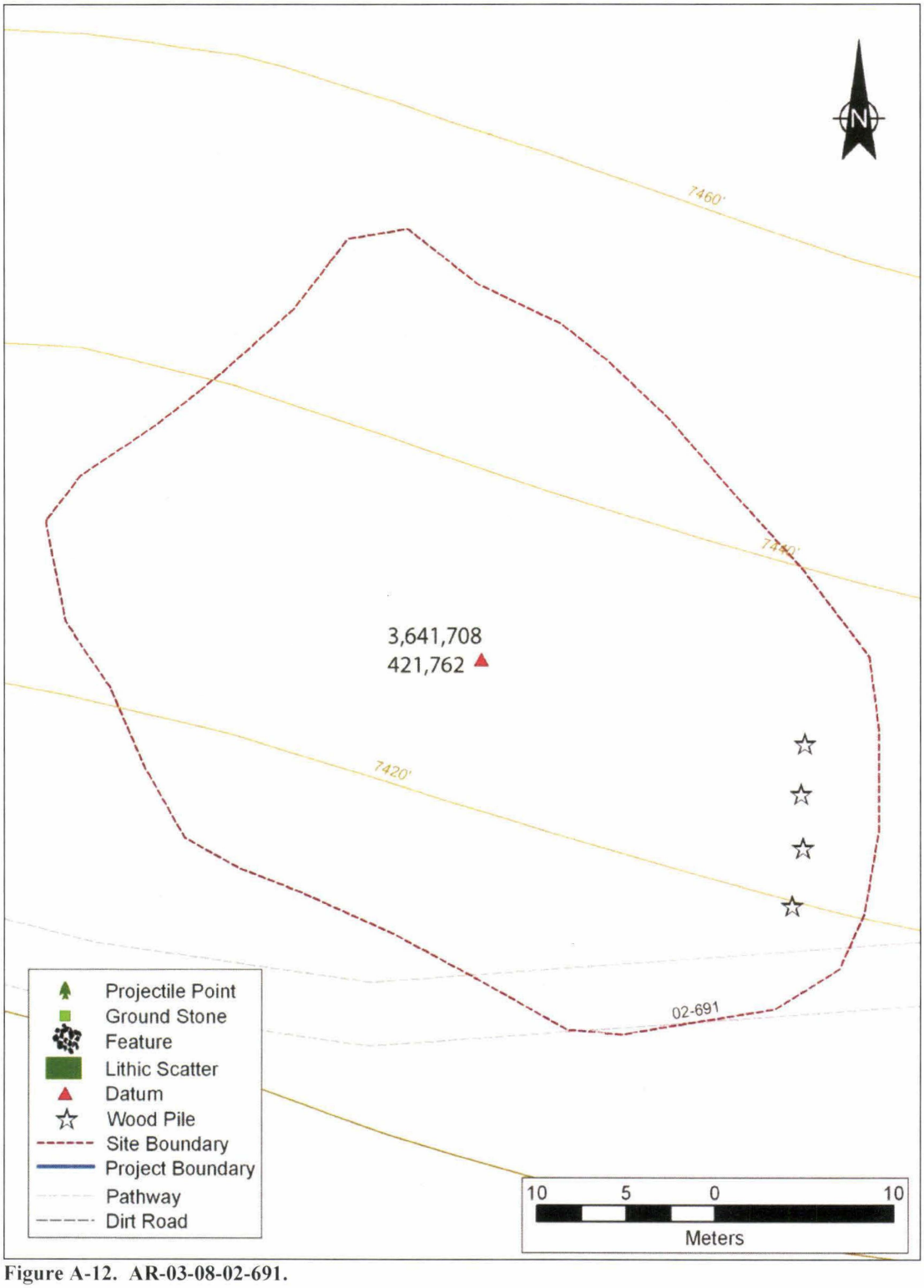

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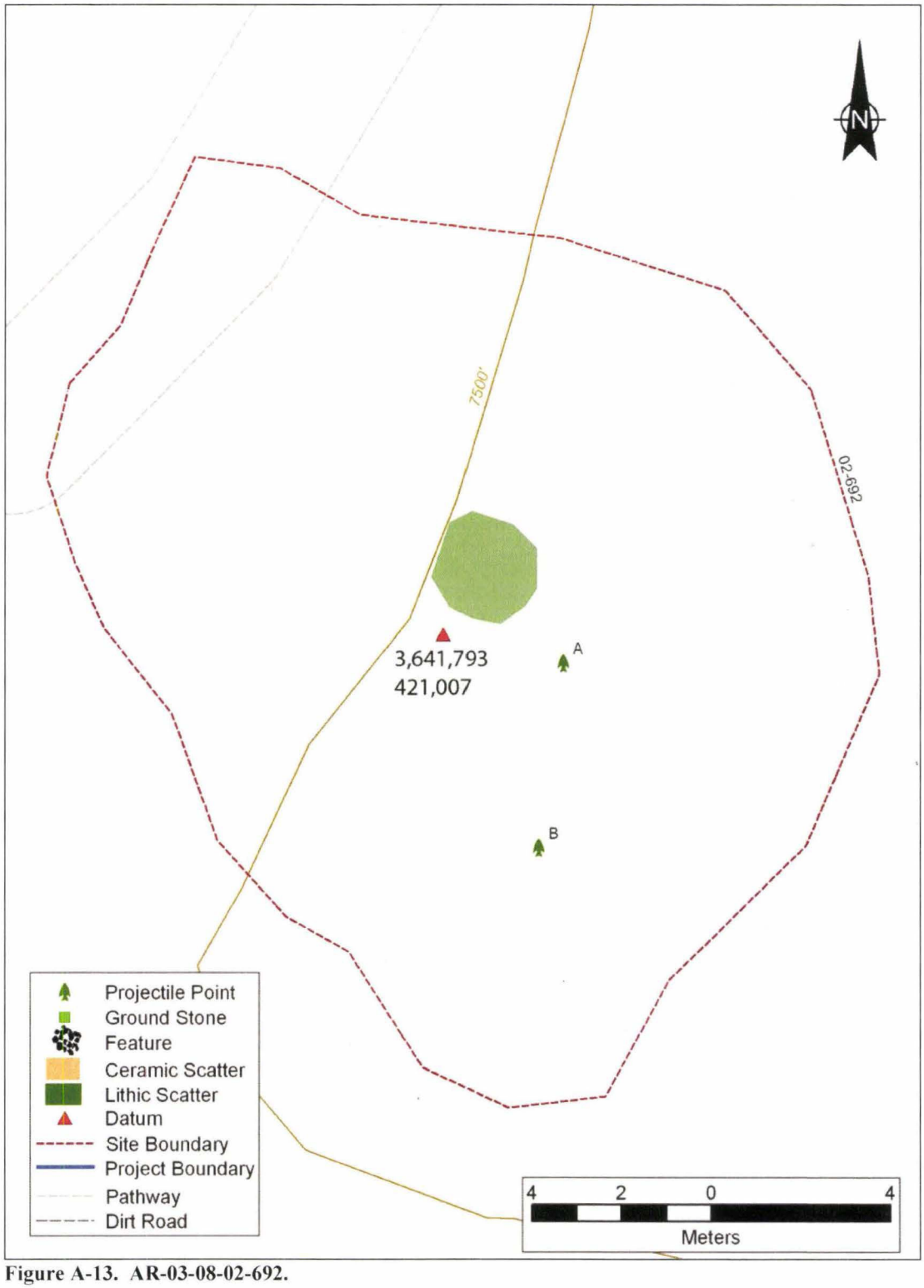

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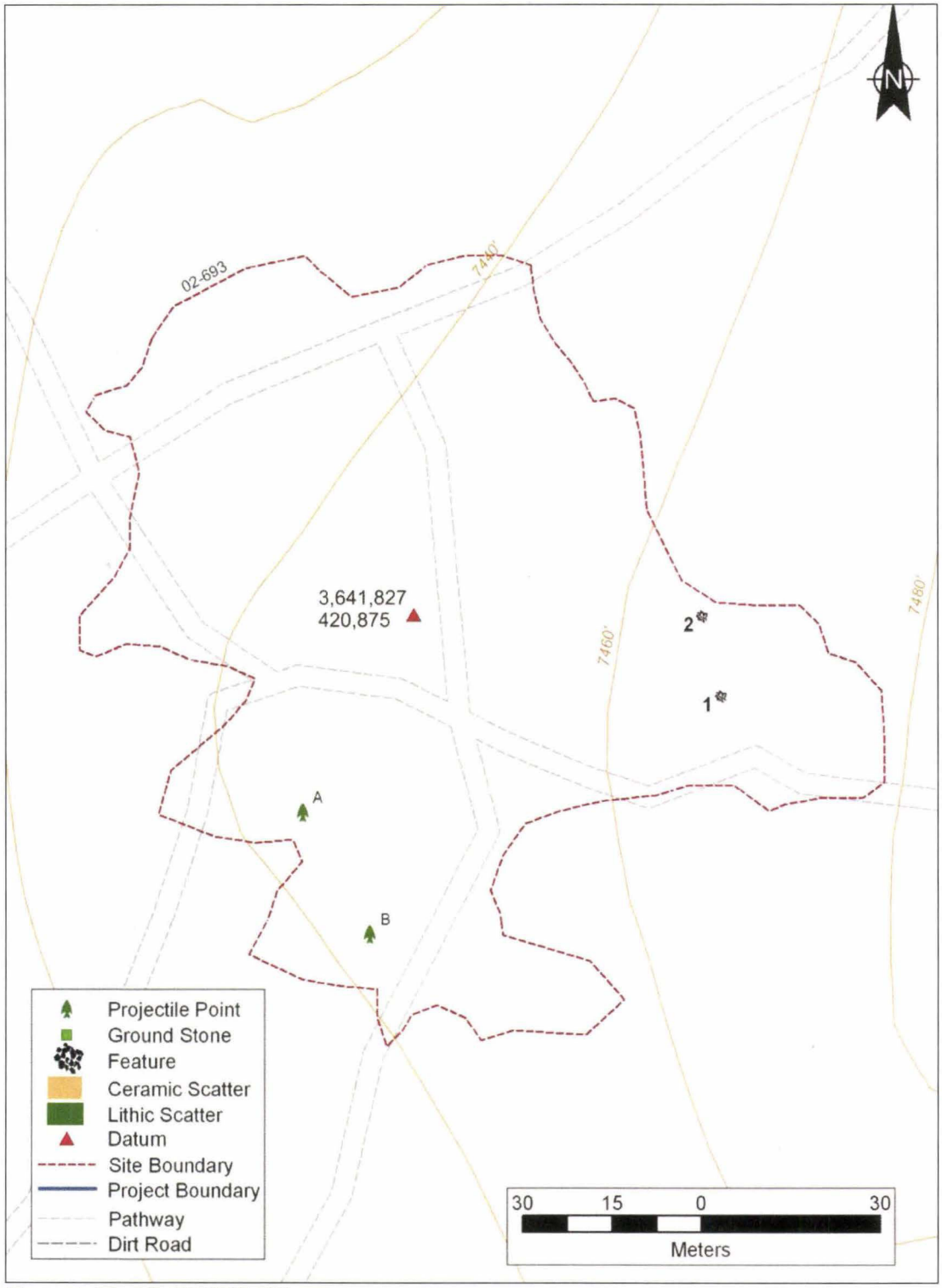

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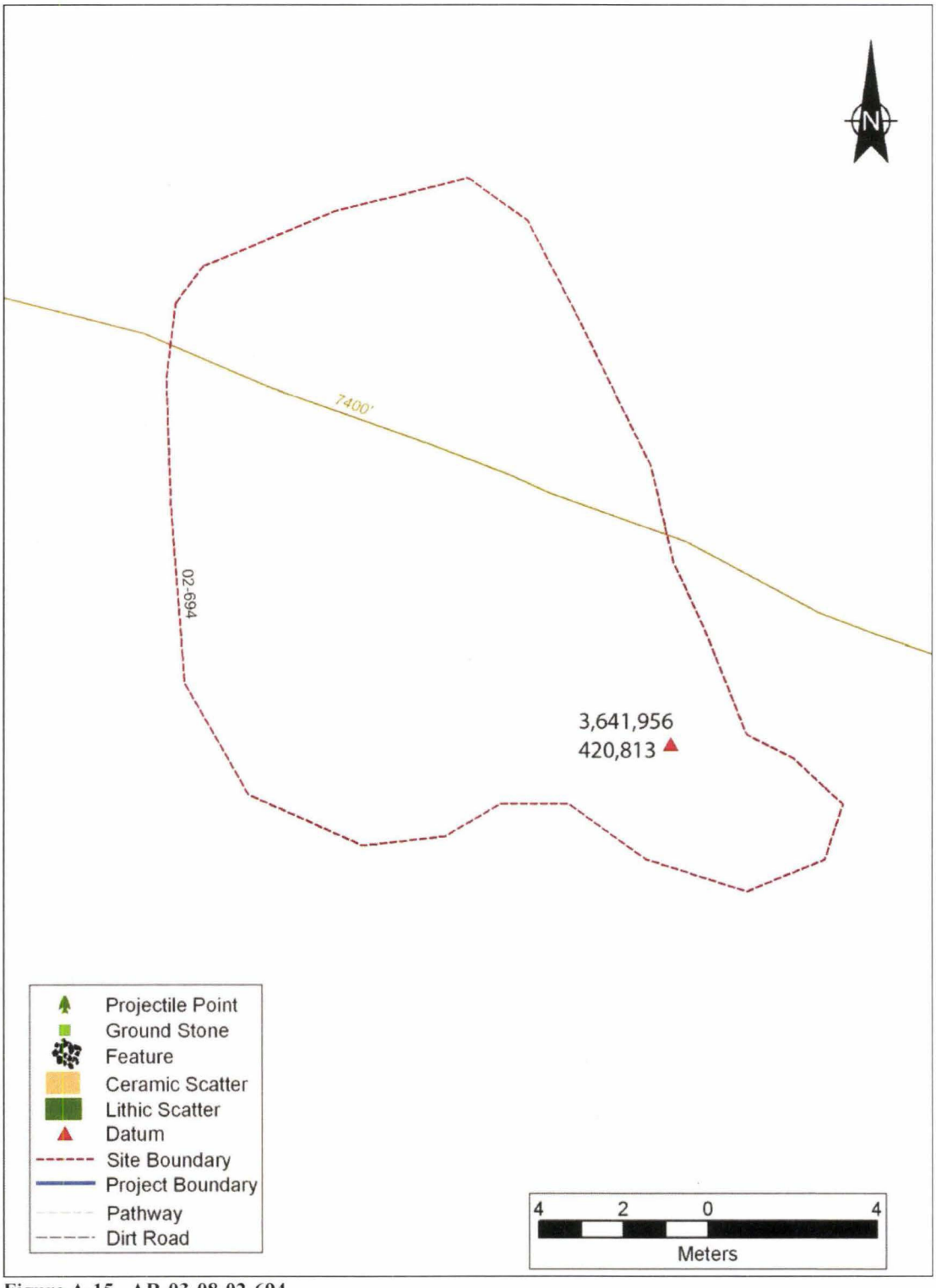

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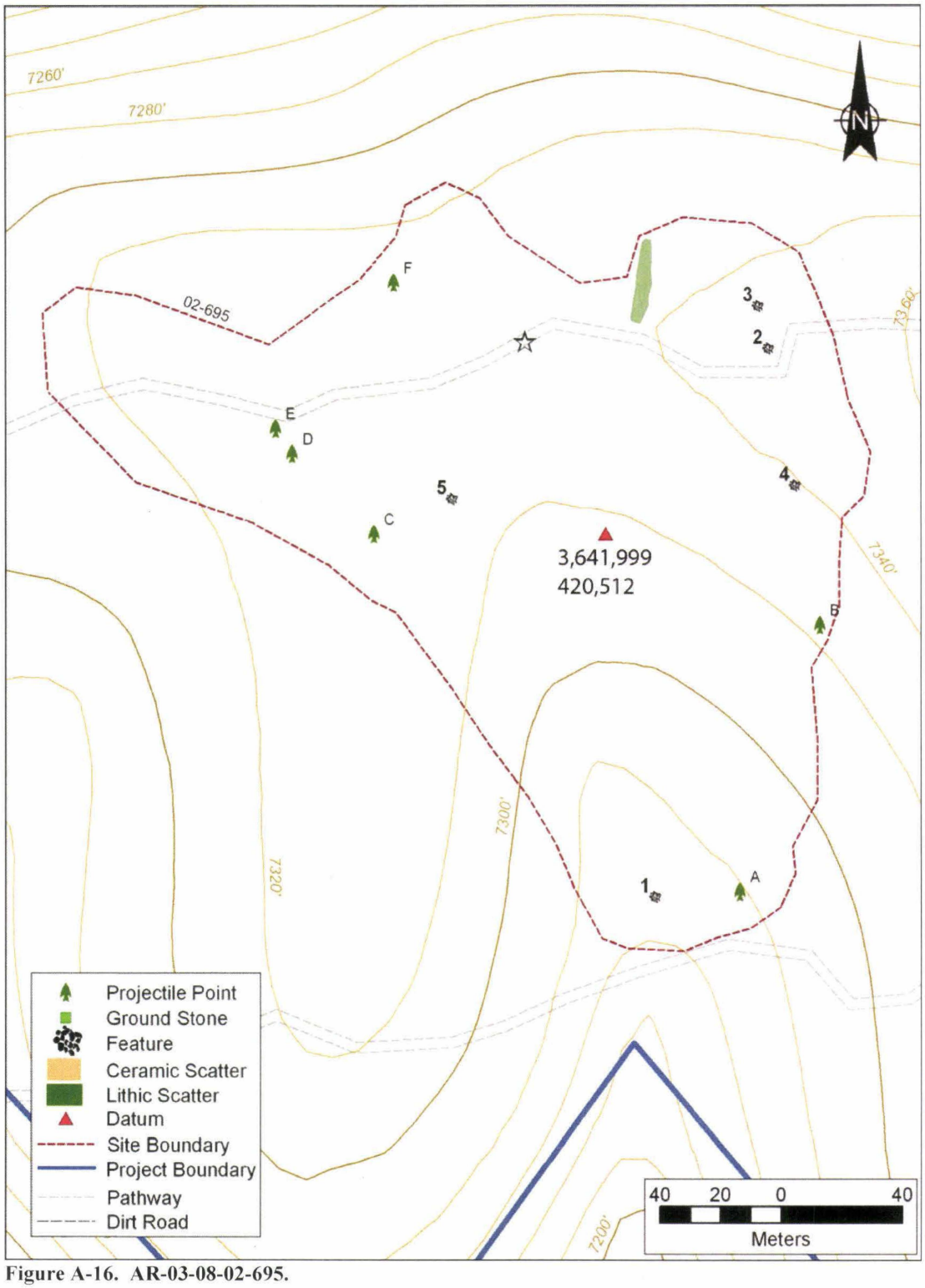

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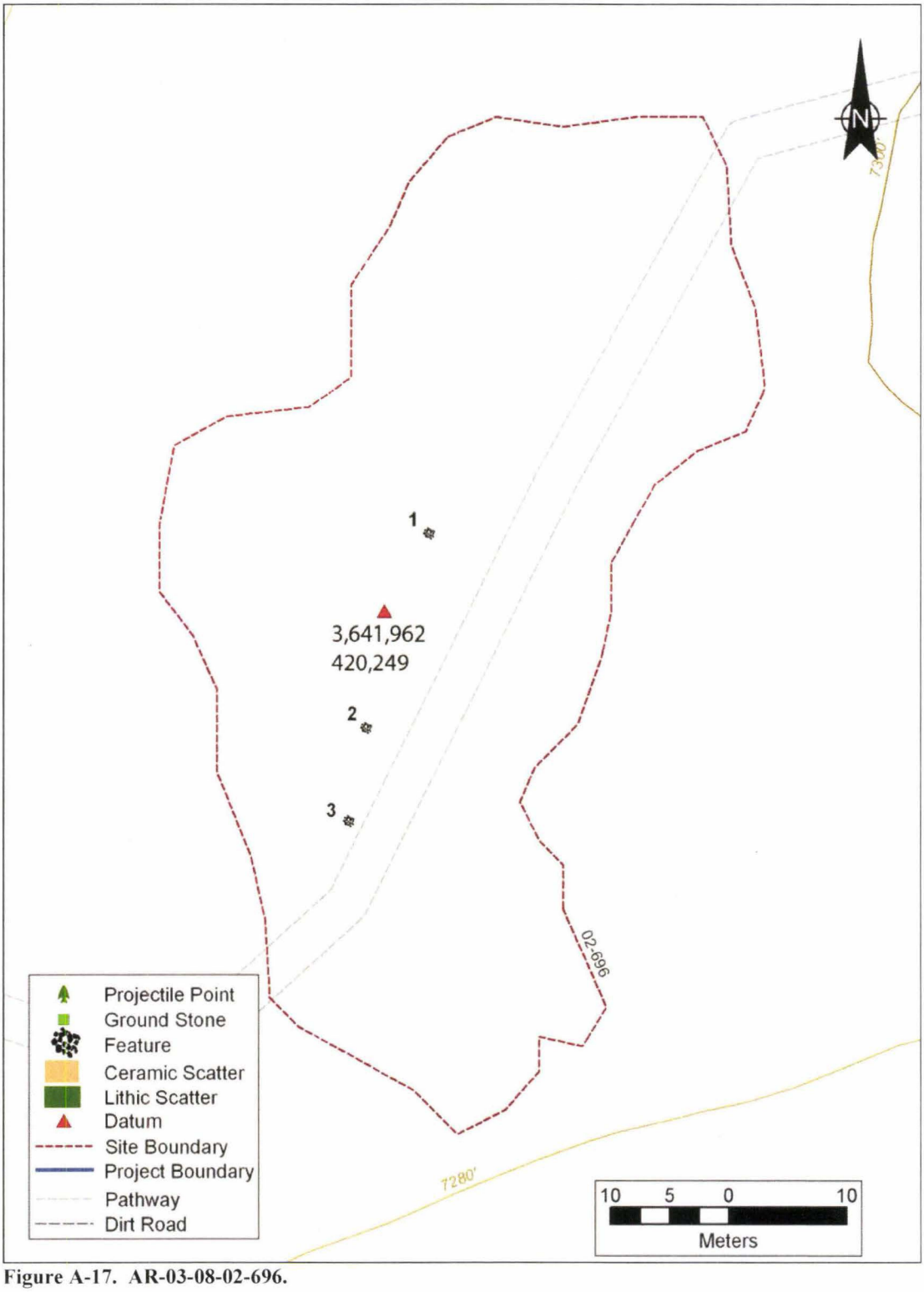

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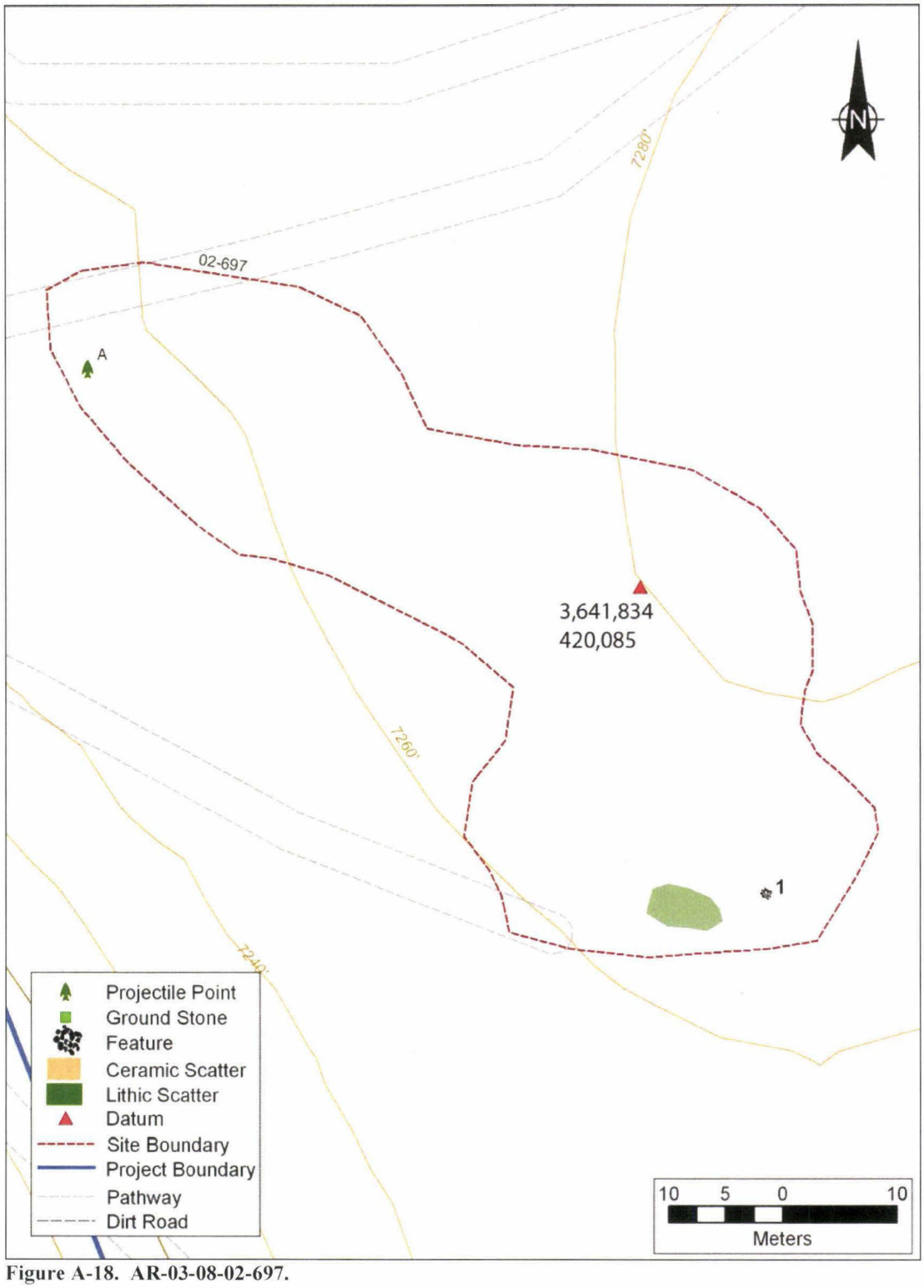

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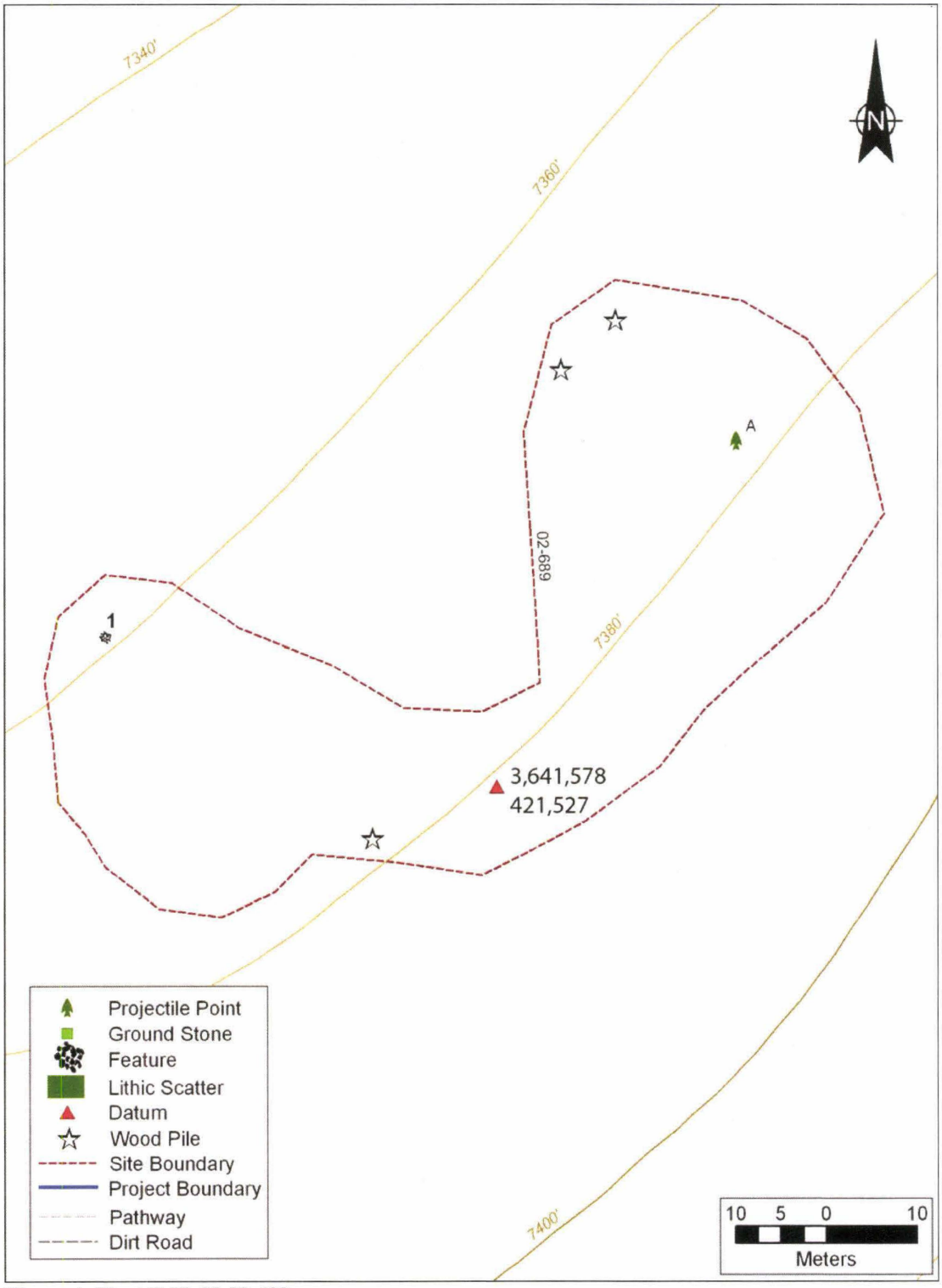

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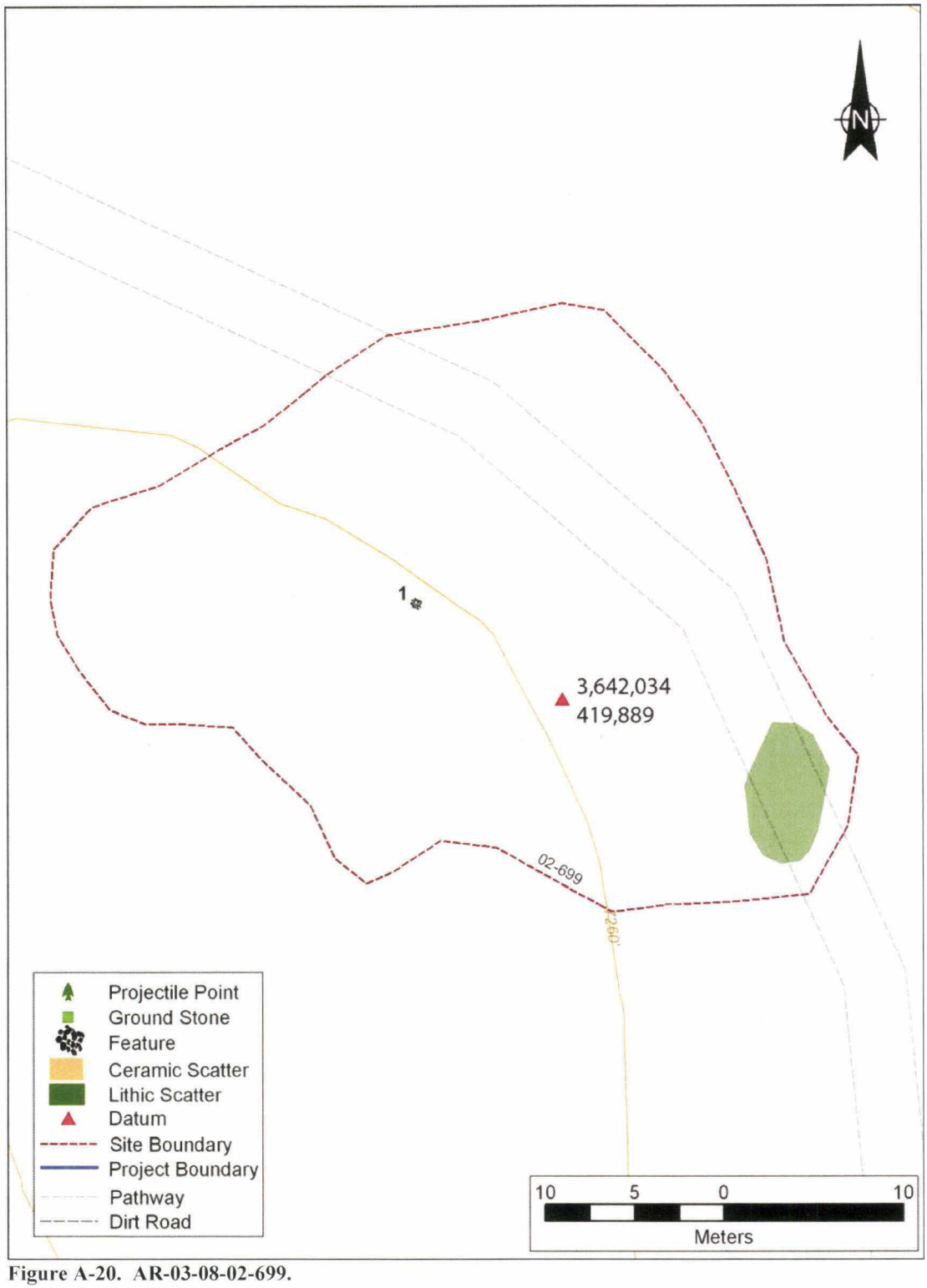

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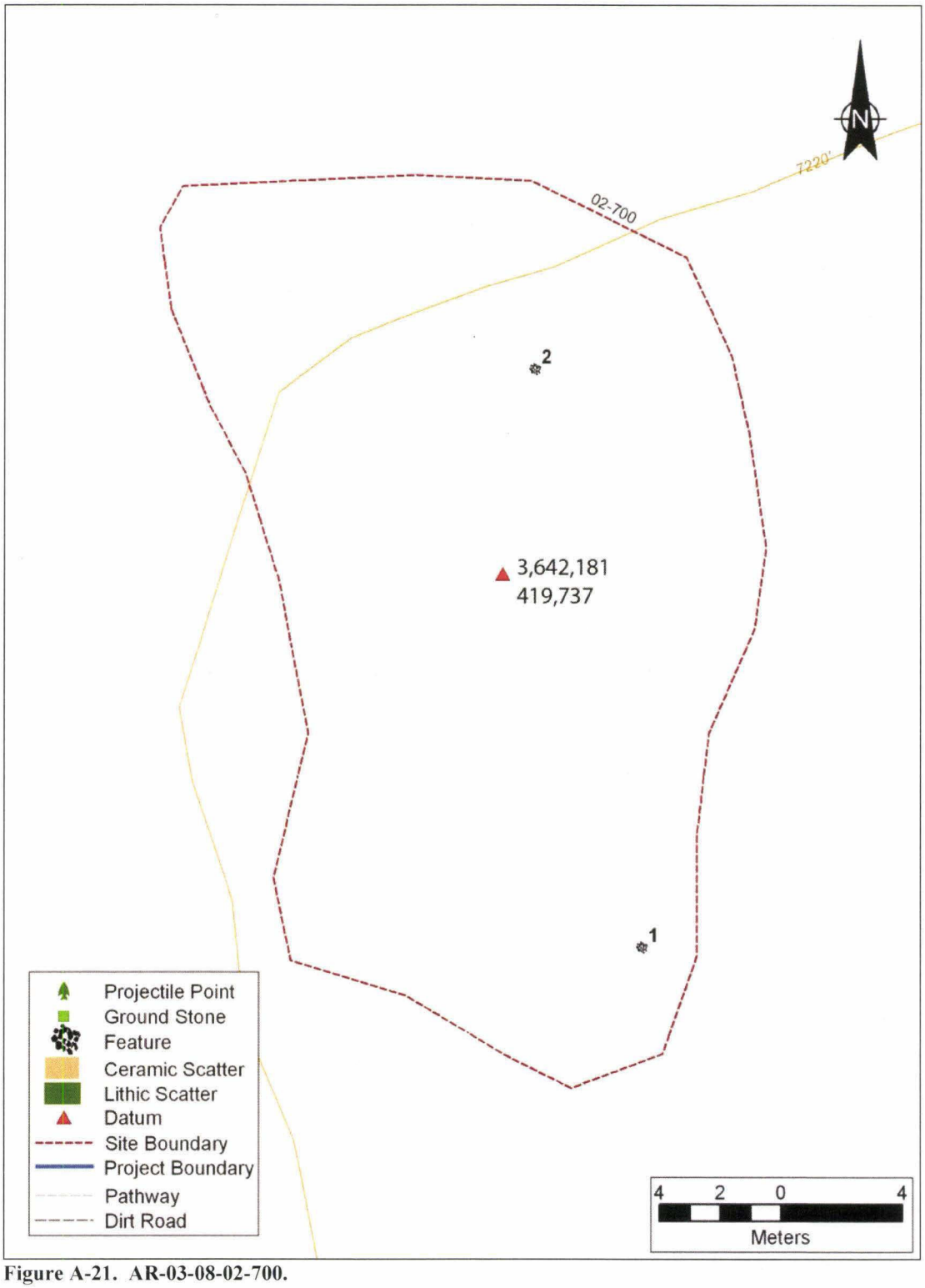

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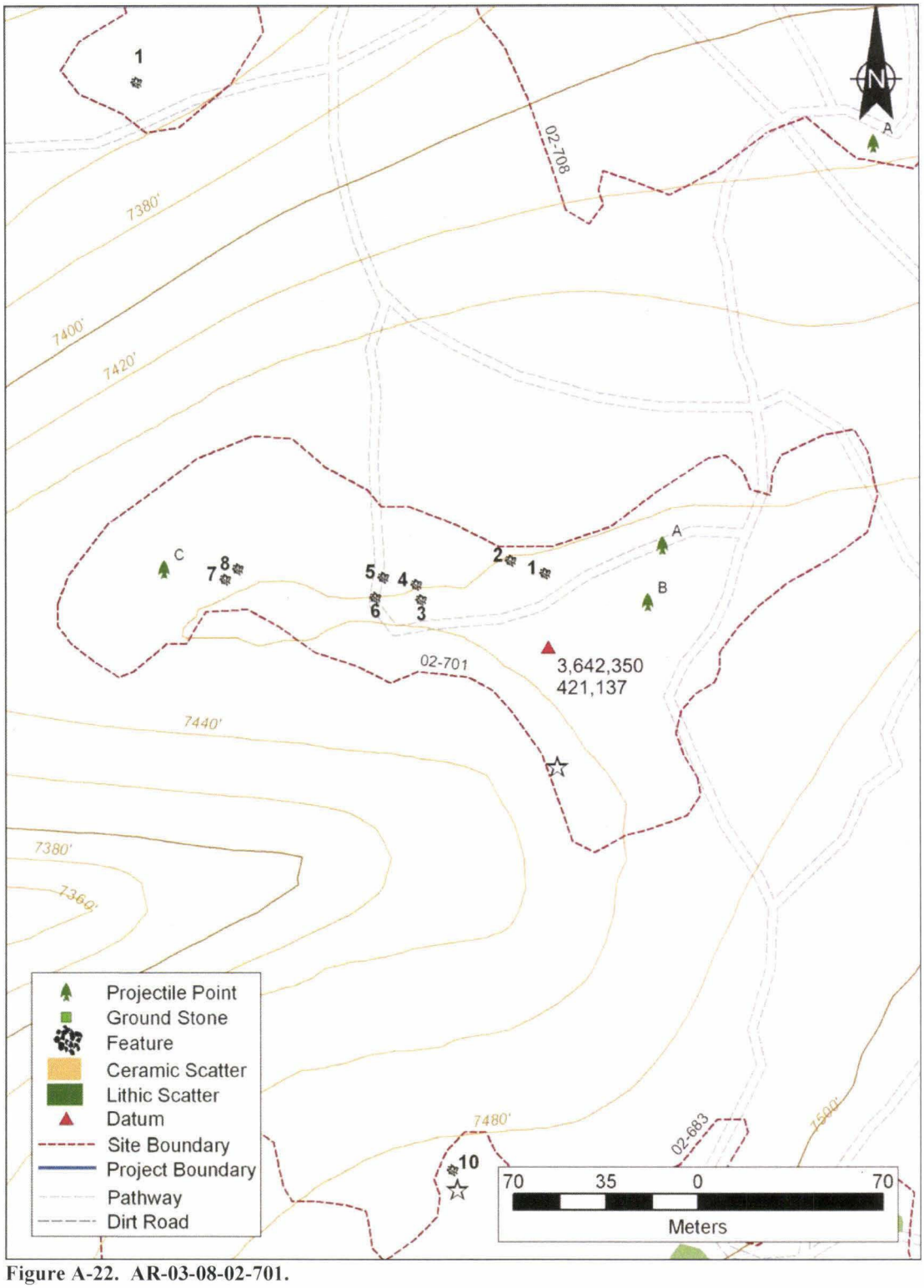

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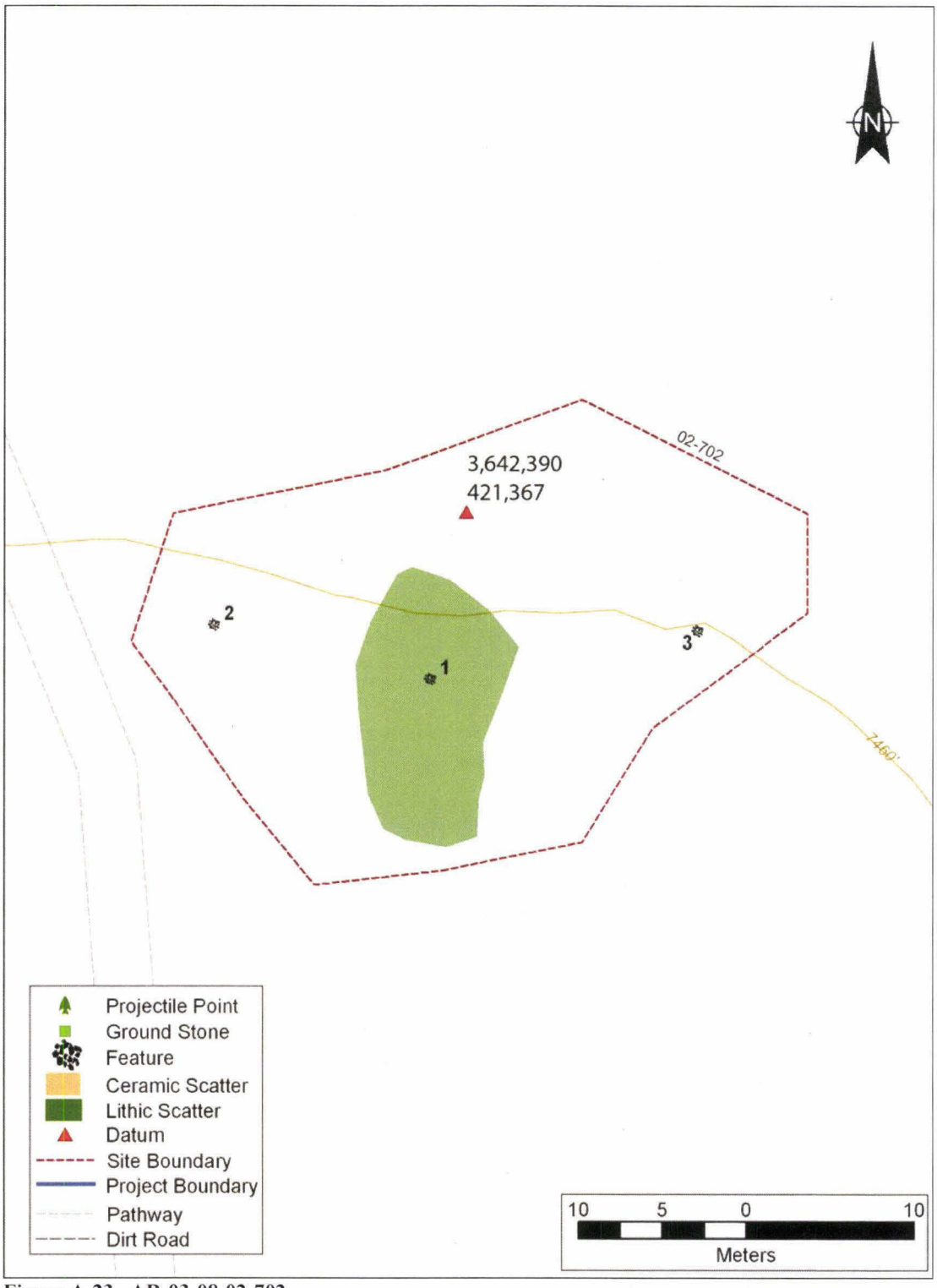

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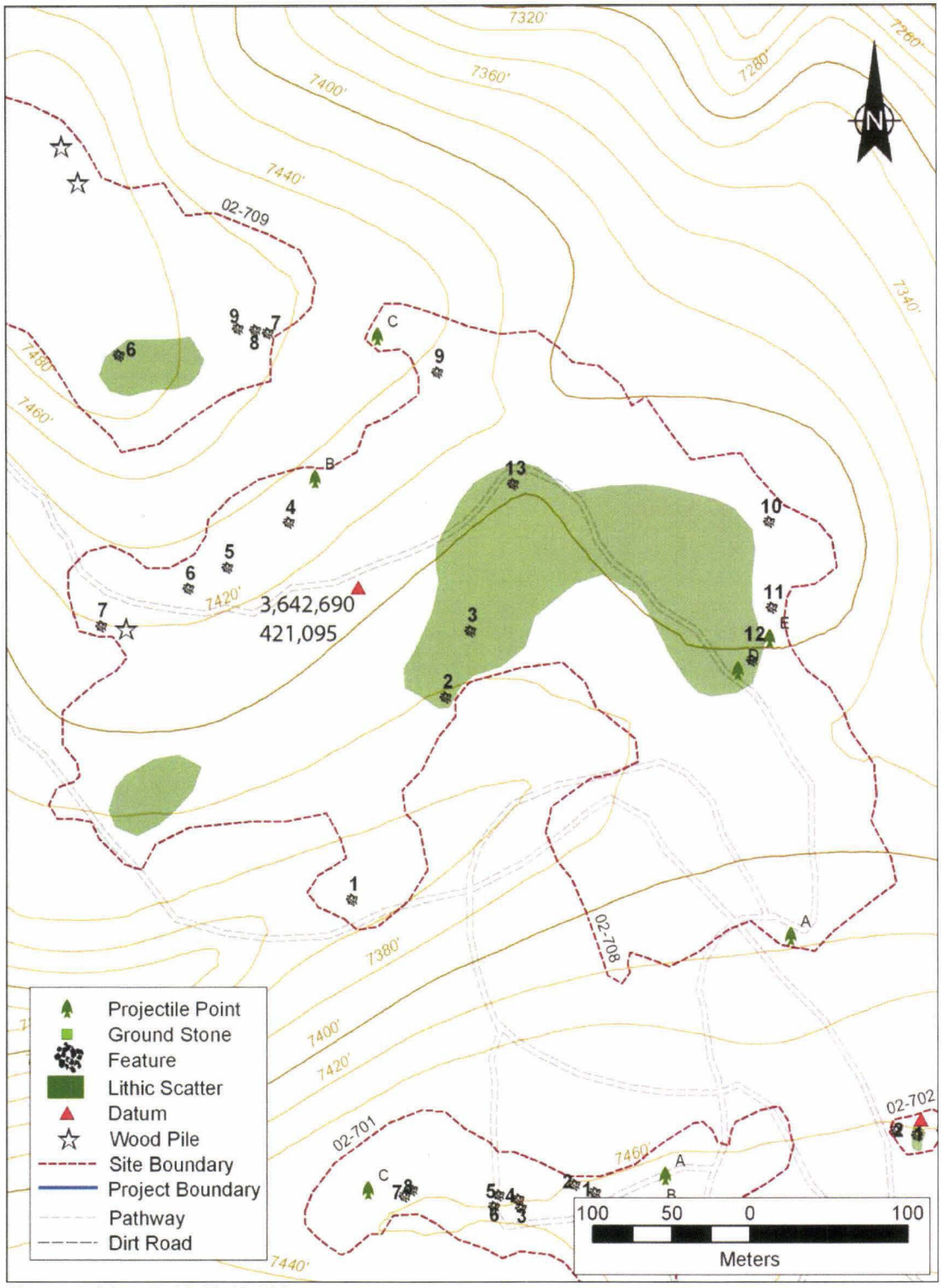

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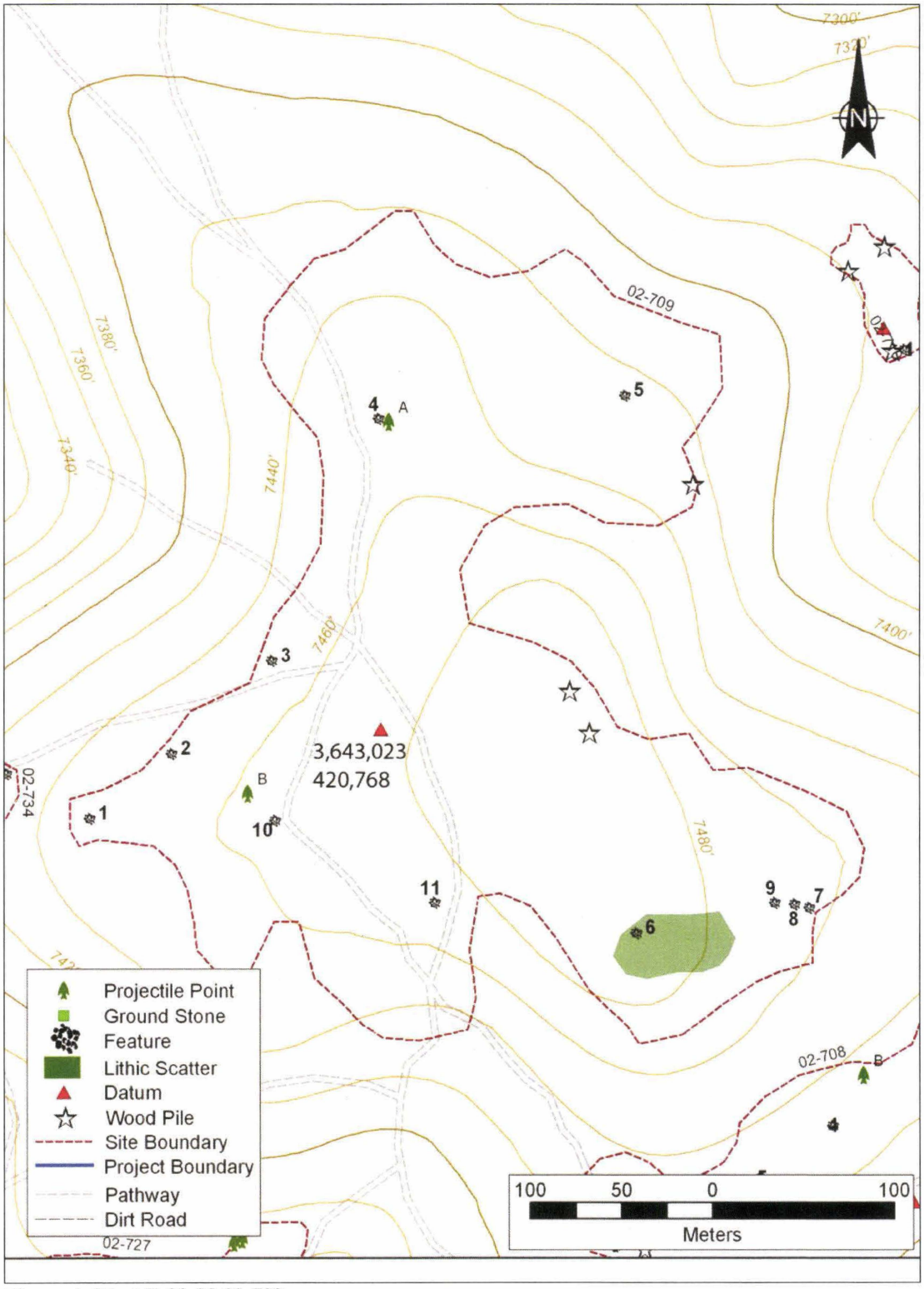

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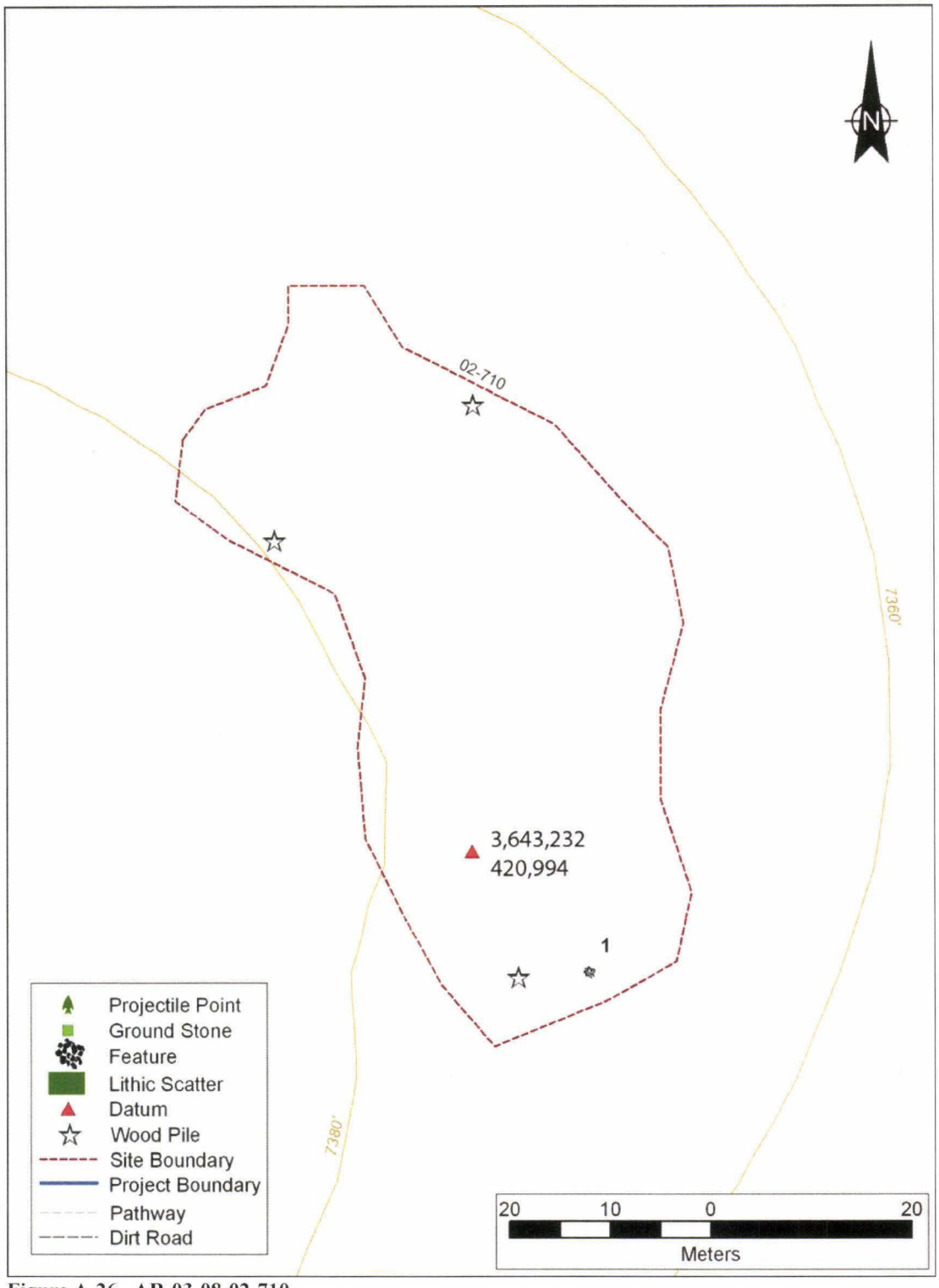

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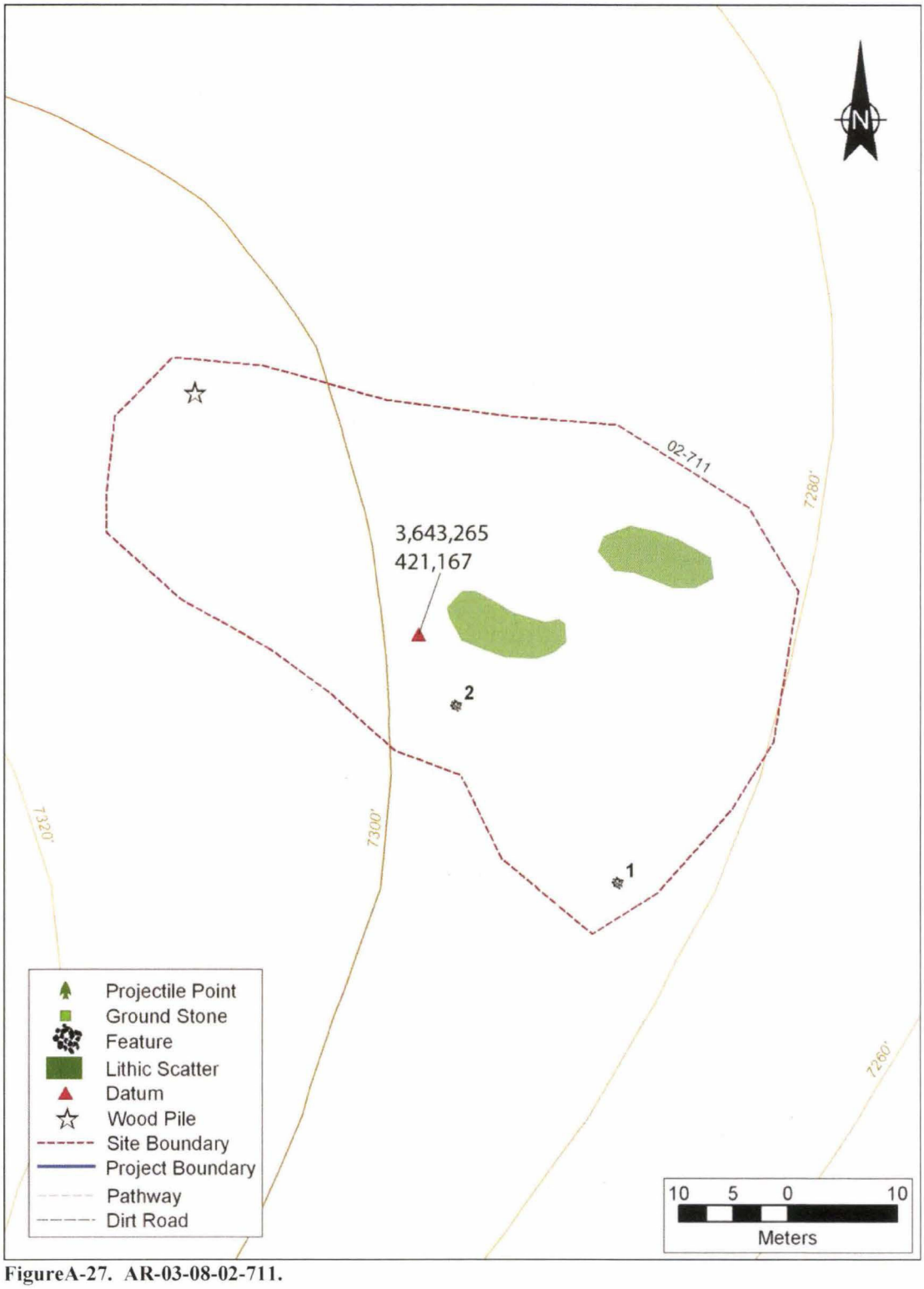


FigureA-27. AR-03-08-02-711.

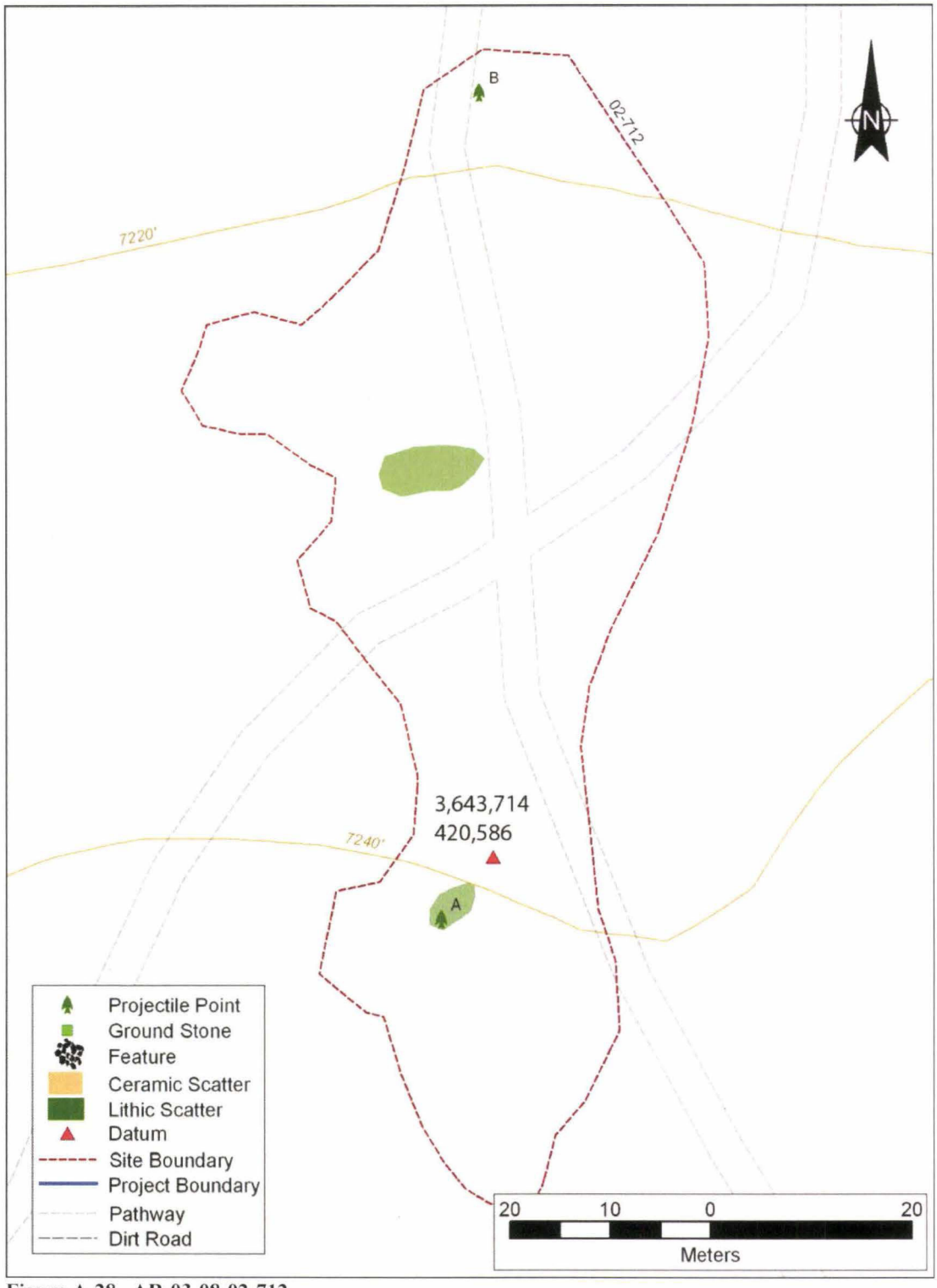


Figure A-28. AR-03-08-02-712.

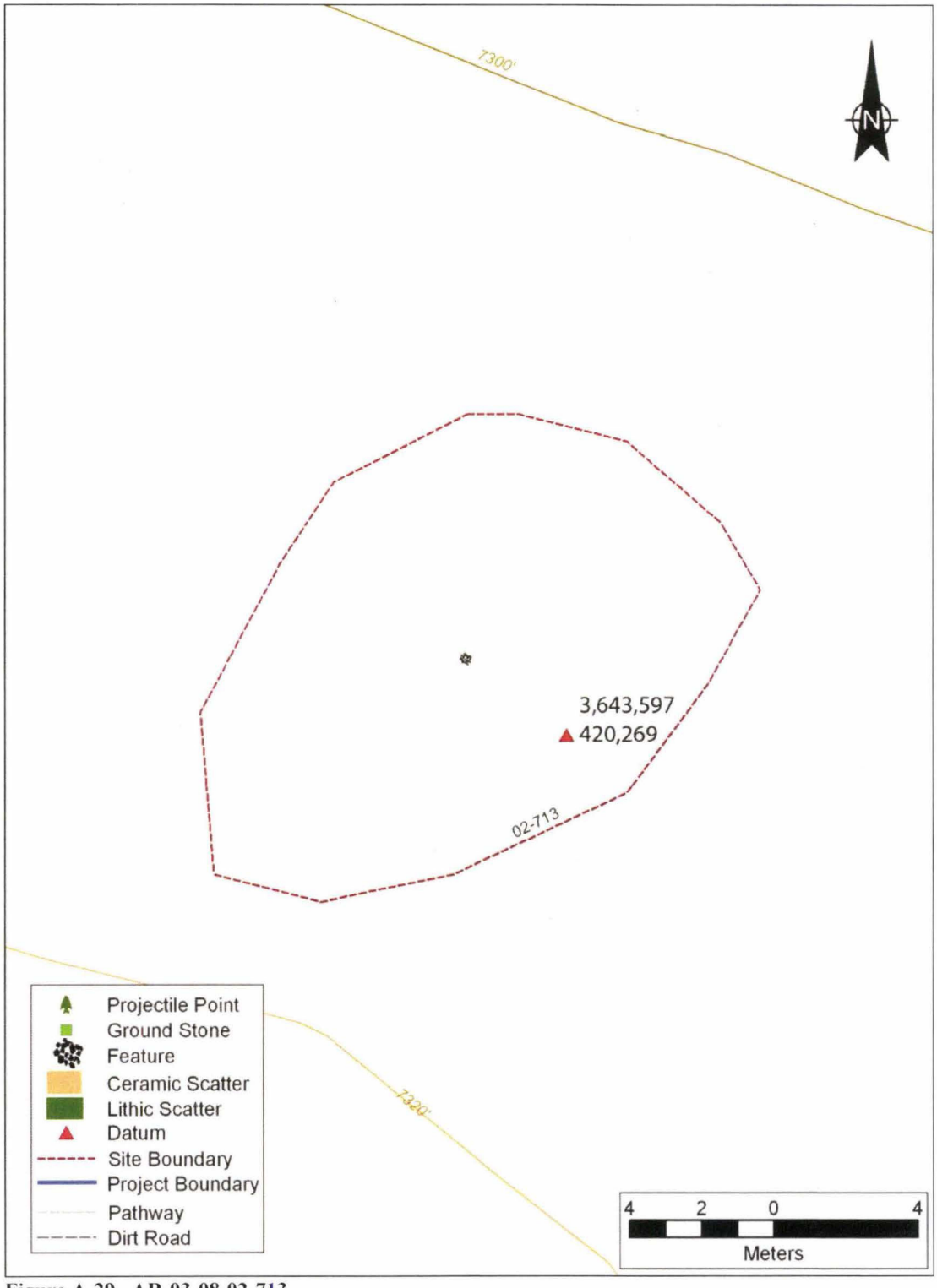


Figure A-29. AR-03-08-02-713.

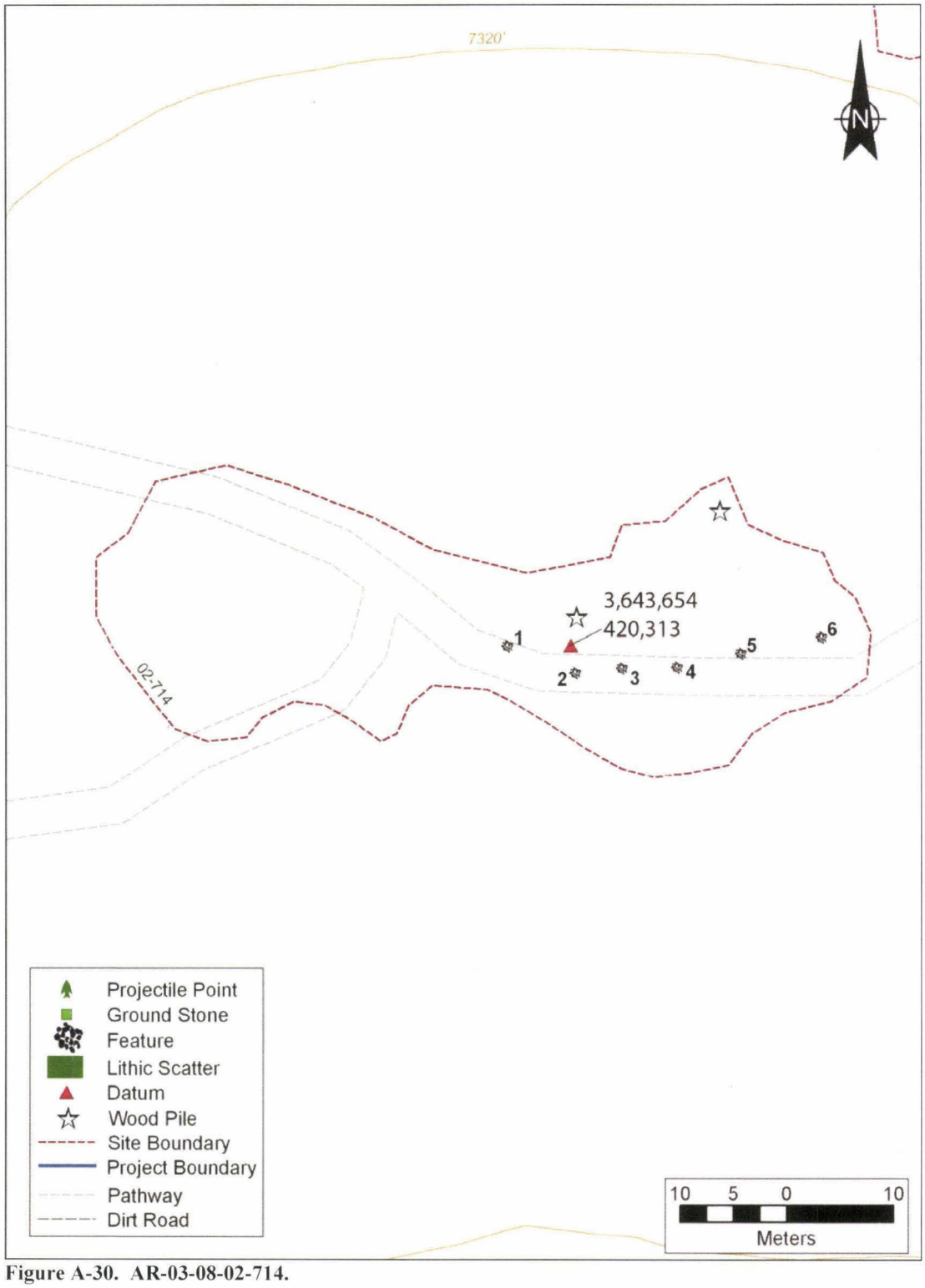


Figure A-30. AR-03-08-02-714.

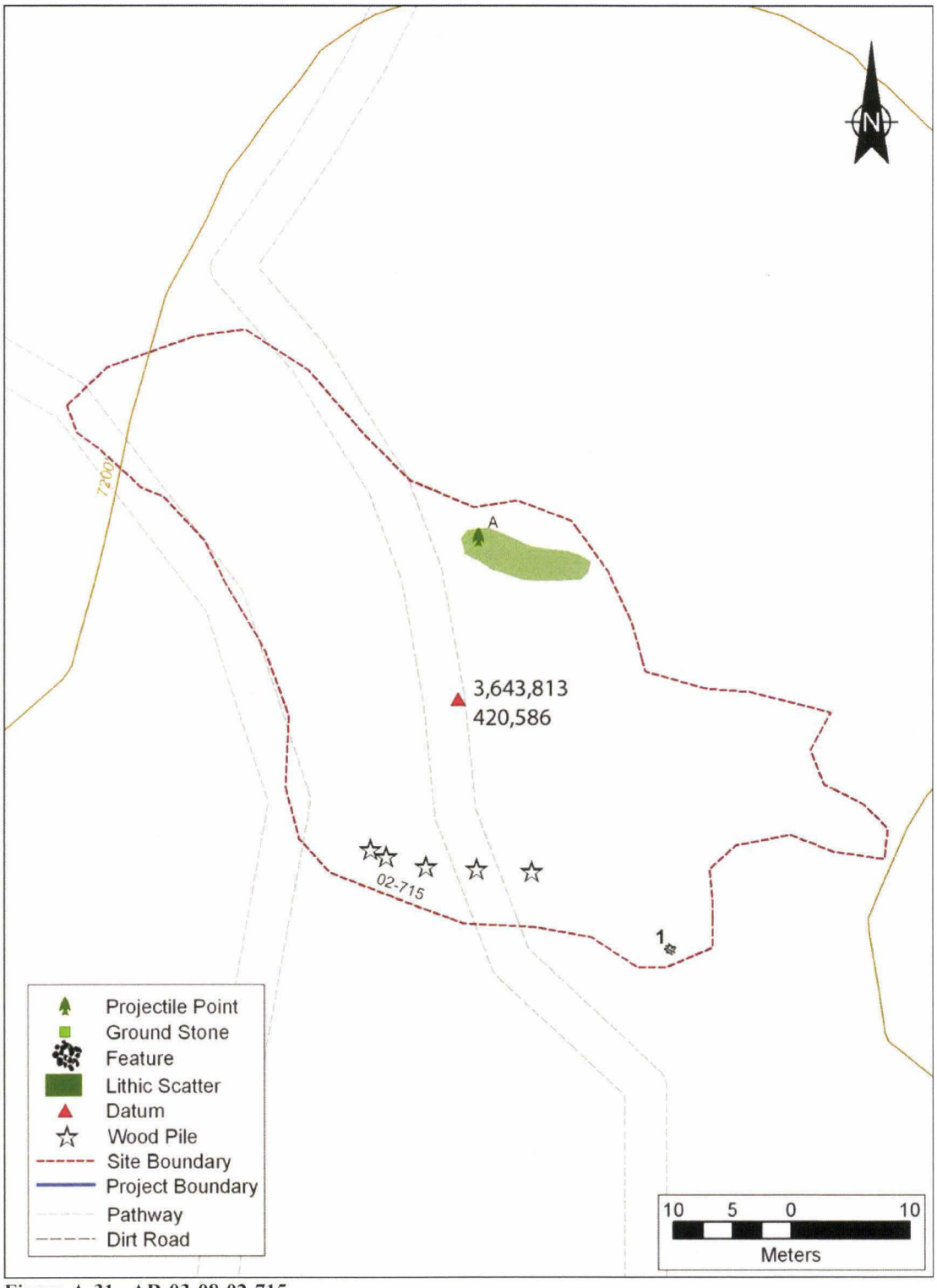


Figure A-31. AR-03-08-02-715.

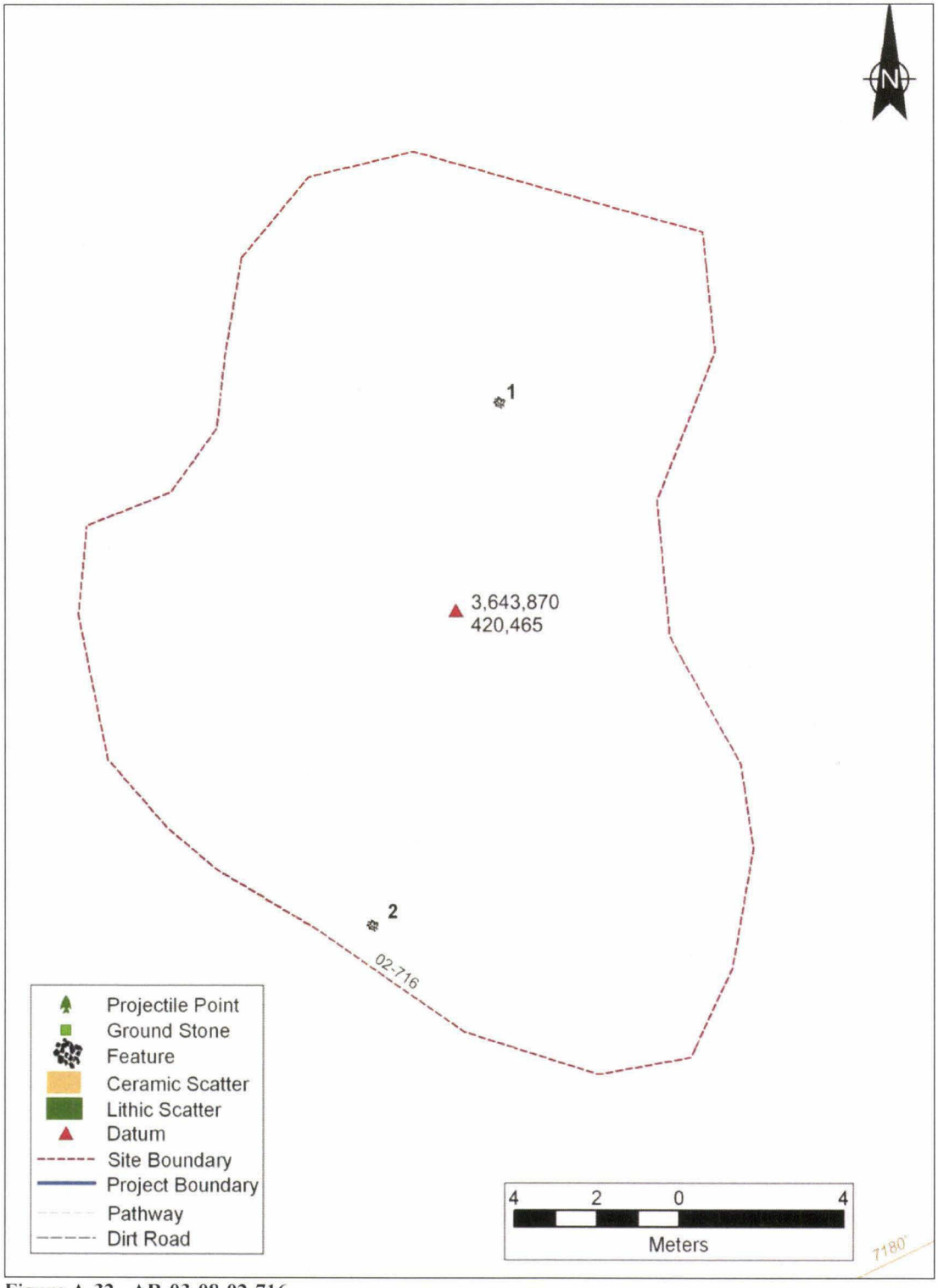


Figure A-32. AR-03-08-02-716.

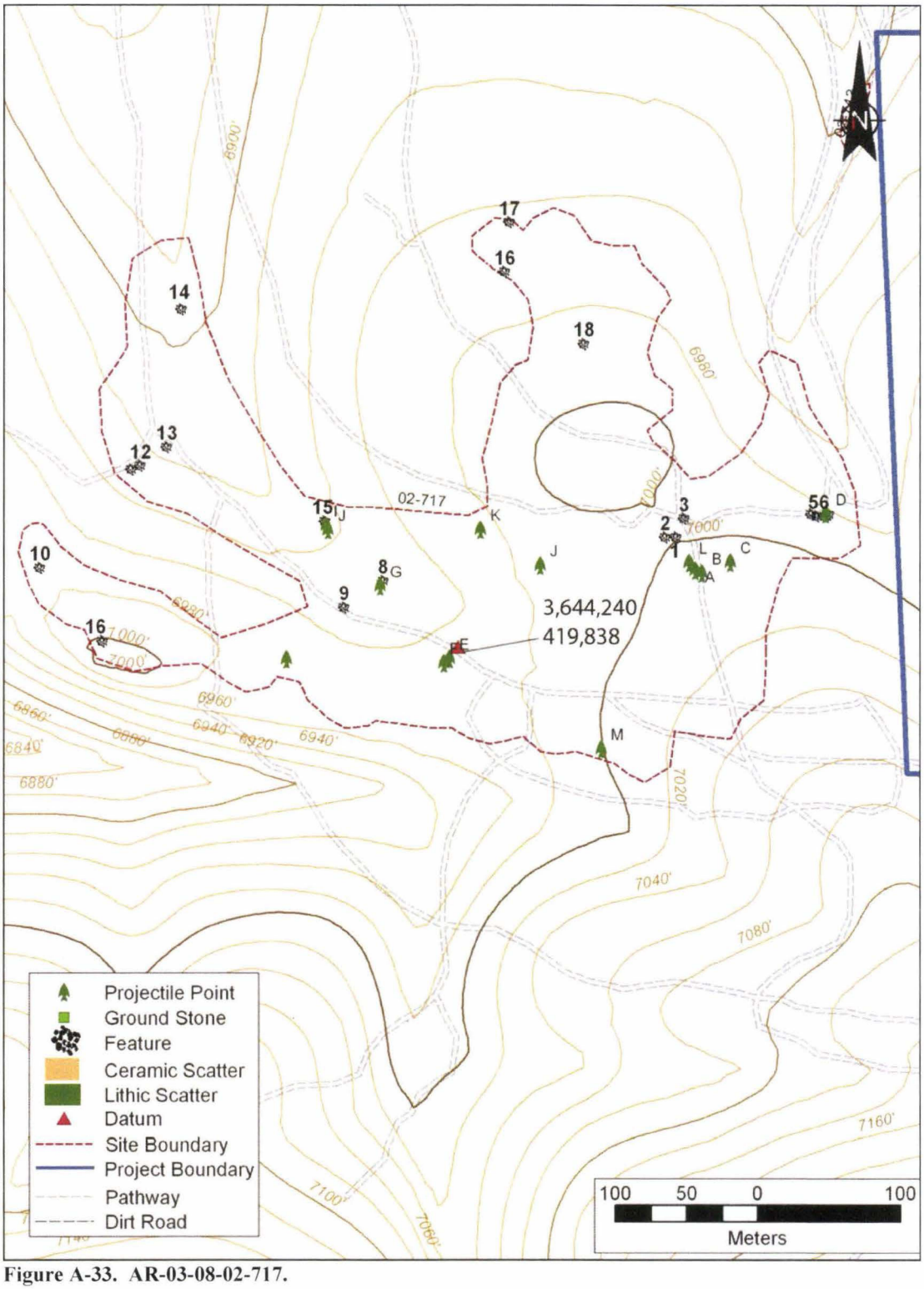


Figure A-33. AR-03-08-02-717.

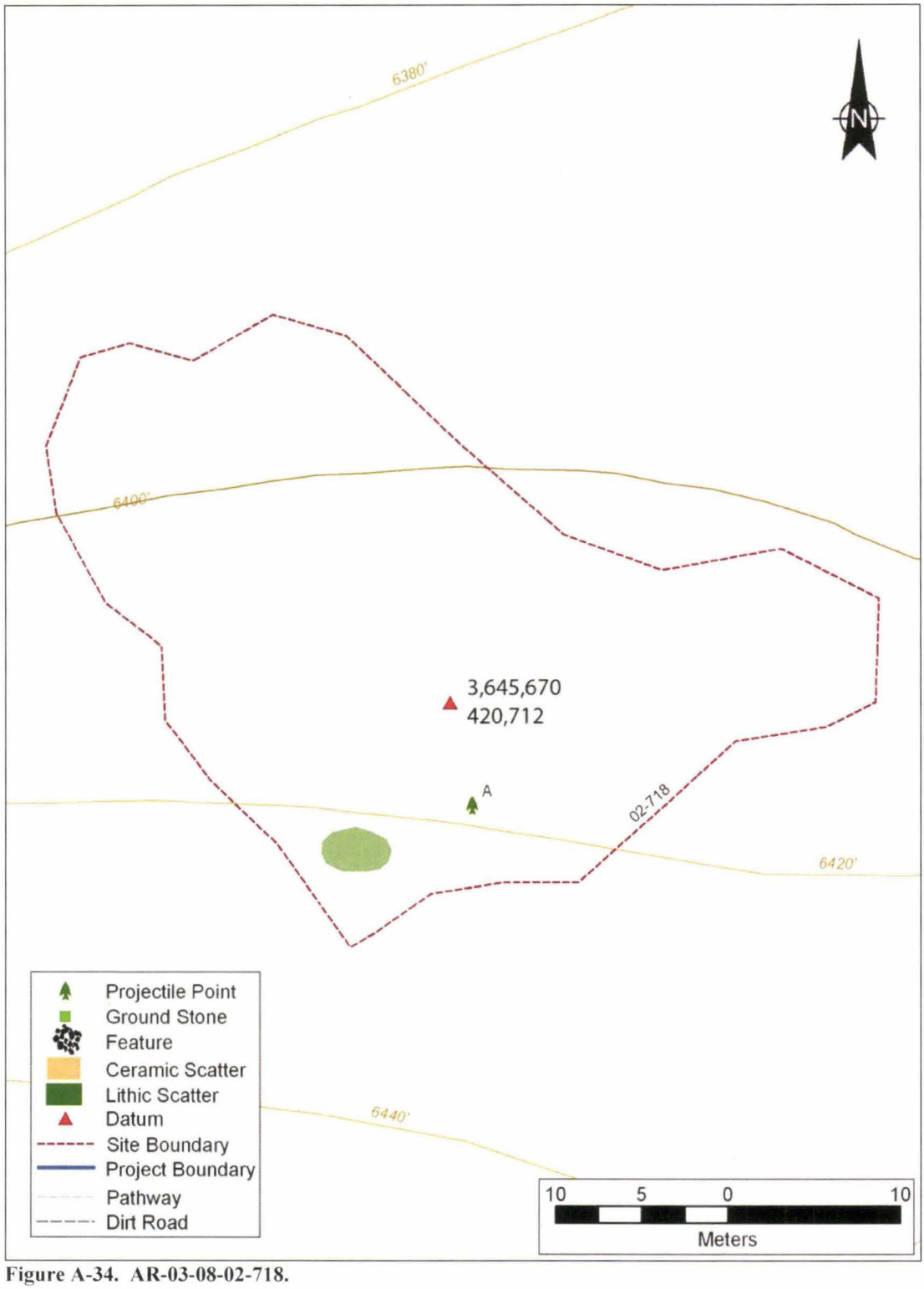


Figure A-34. AR-03-08-02-718.

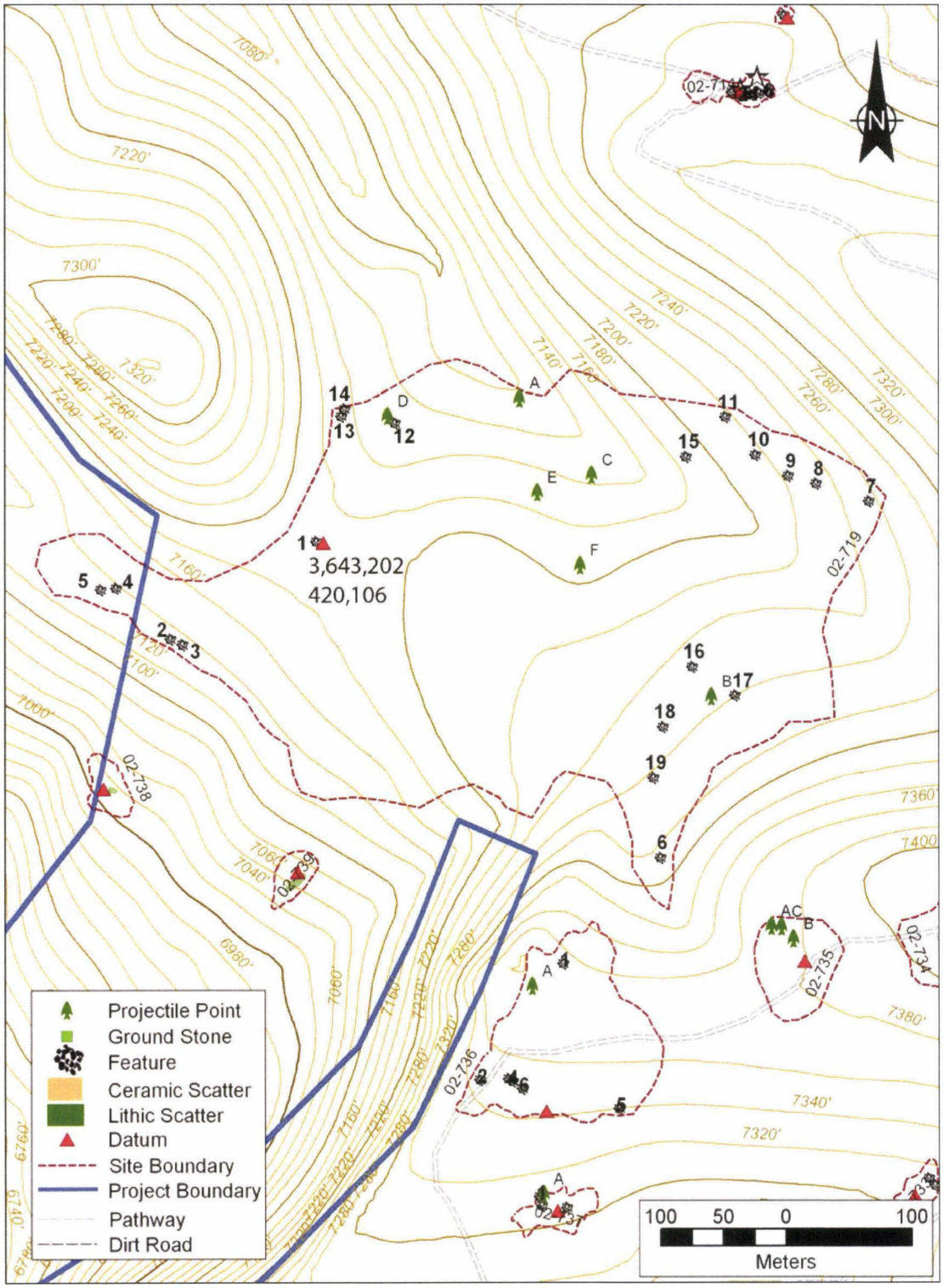


Figure A-35. AR-03-08-02-719.

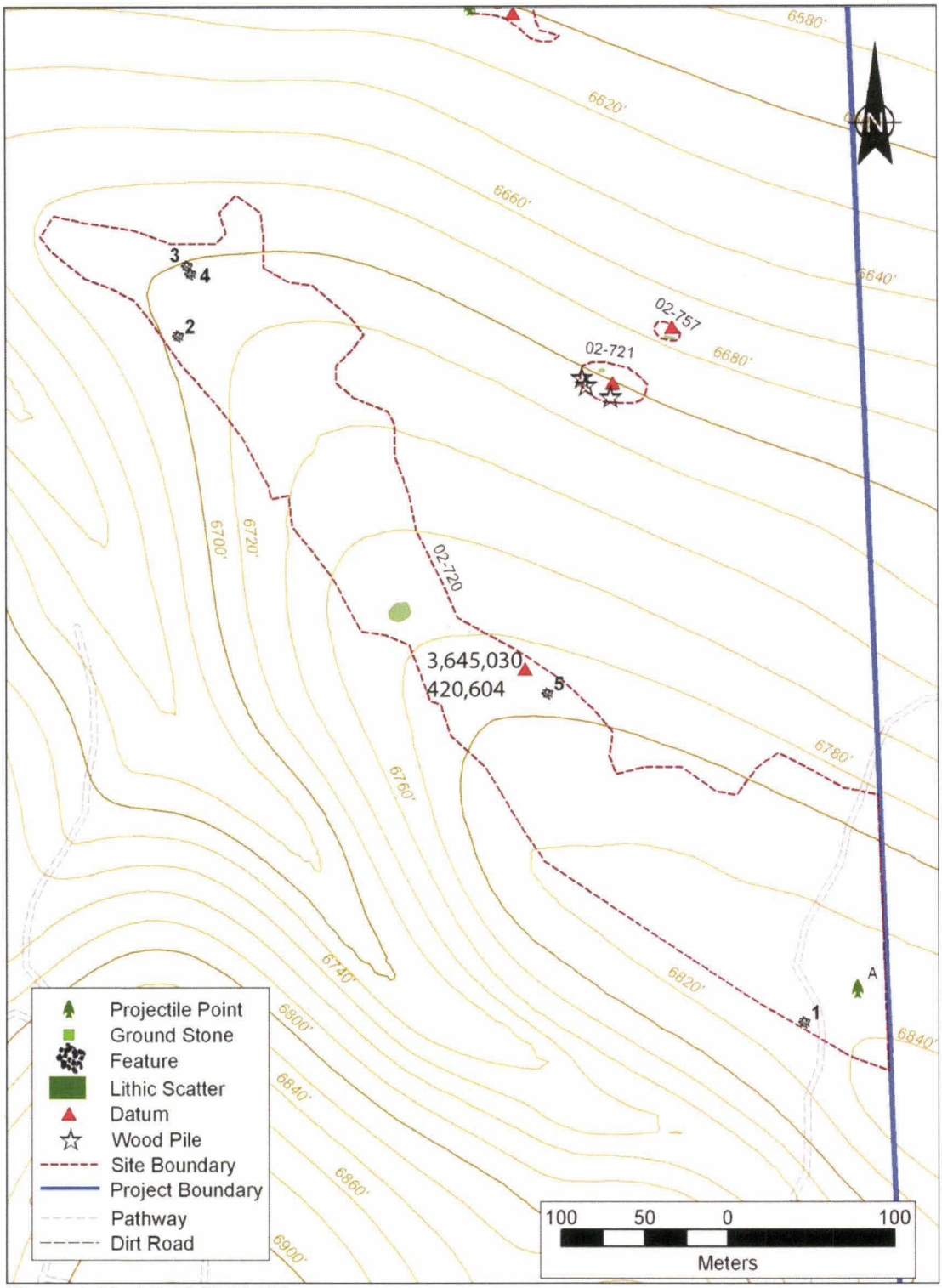


Figure A-36. AR-03-08-02-720.

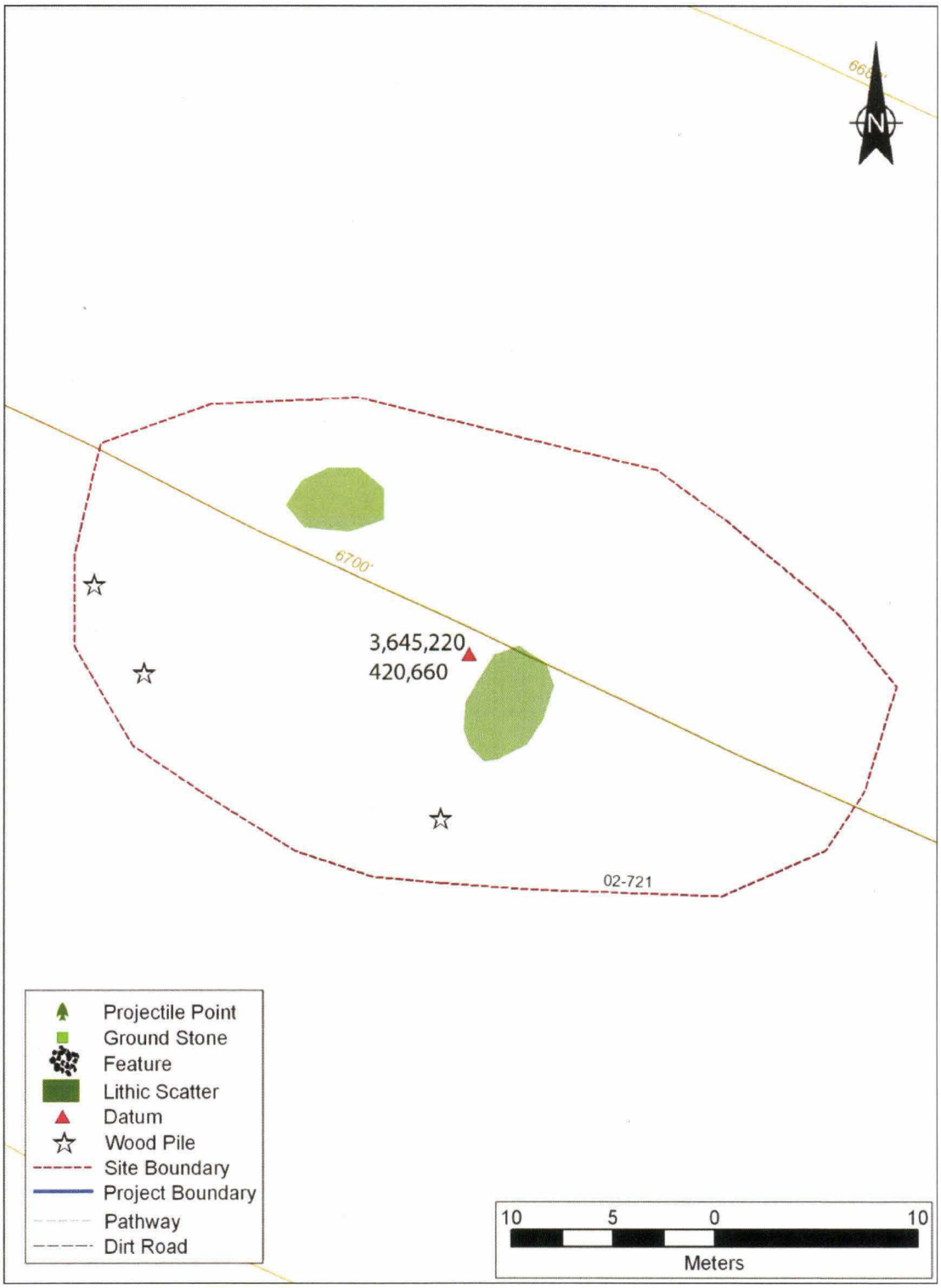


Figure A-37. AR-03-08-02-721.

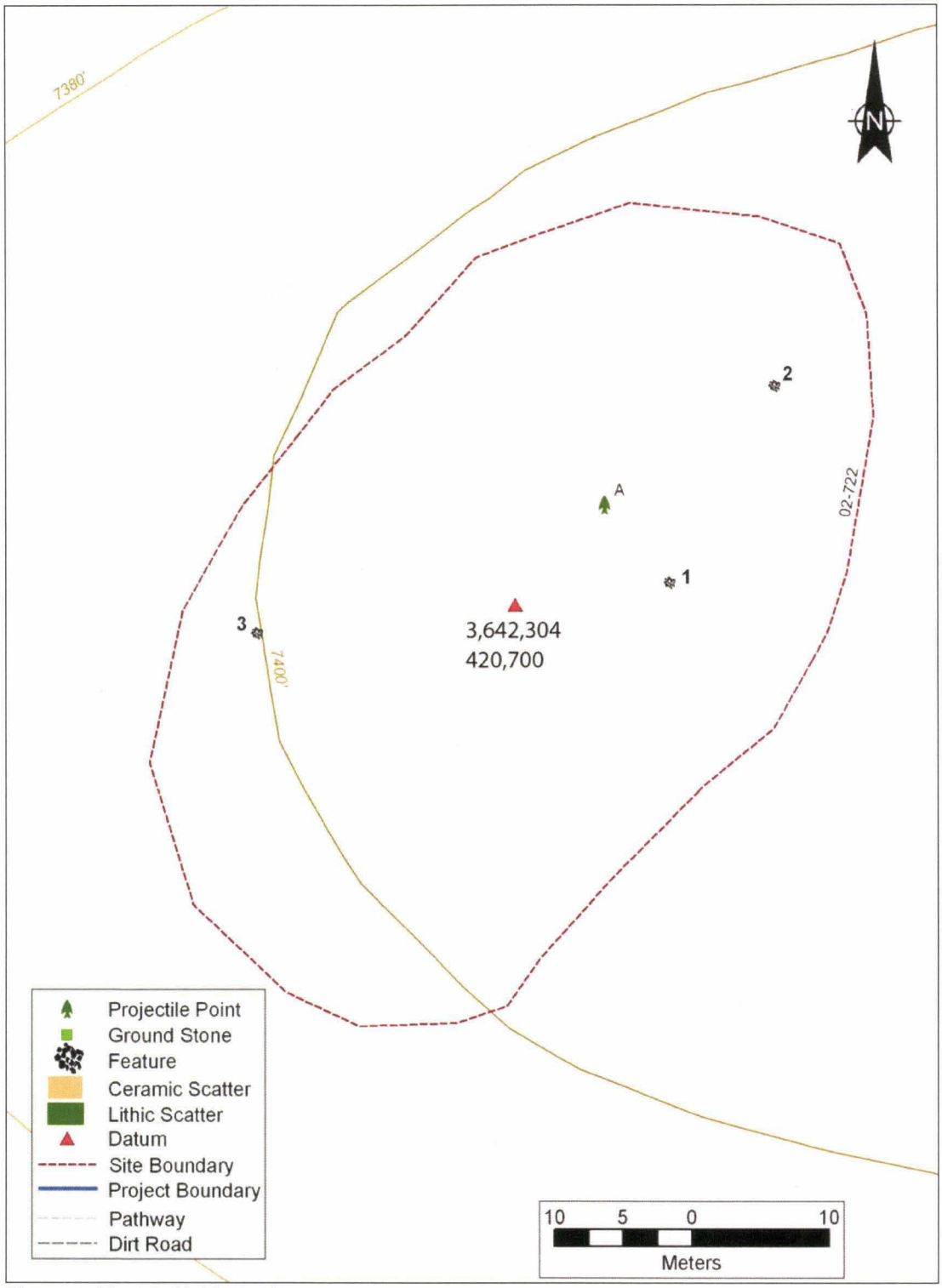


Figure A-38. AR-03-08-02-722.

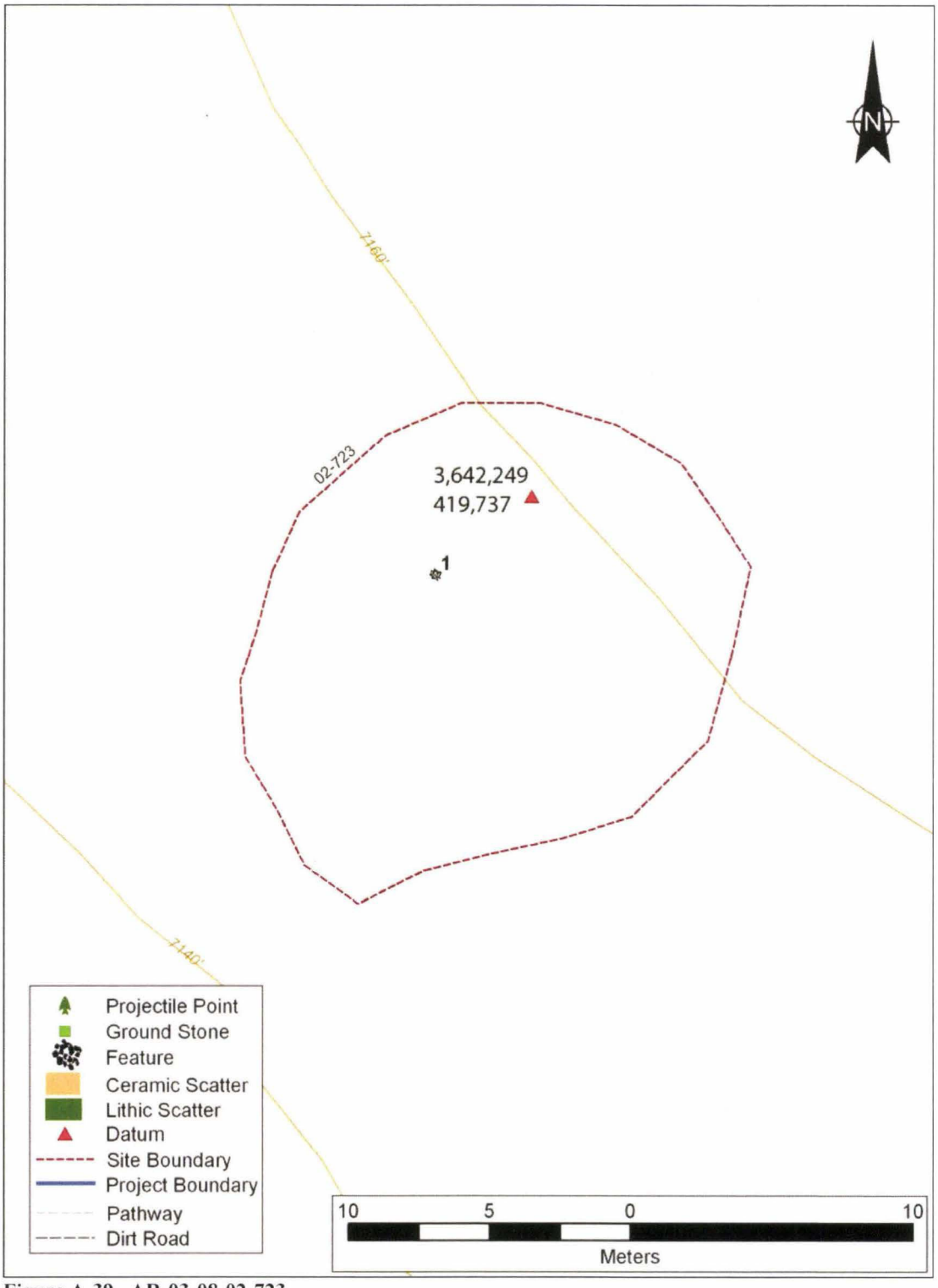


Figure A-39. AR-03-08-02-723.

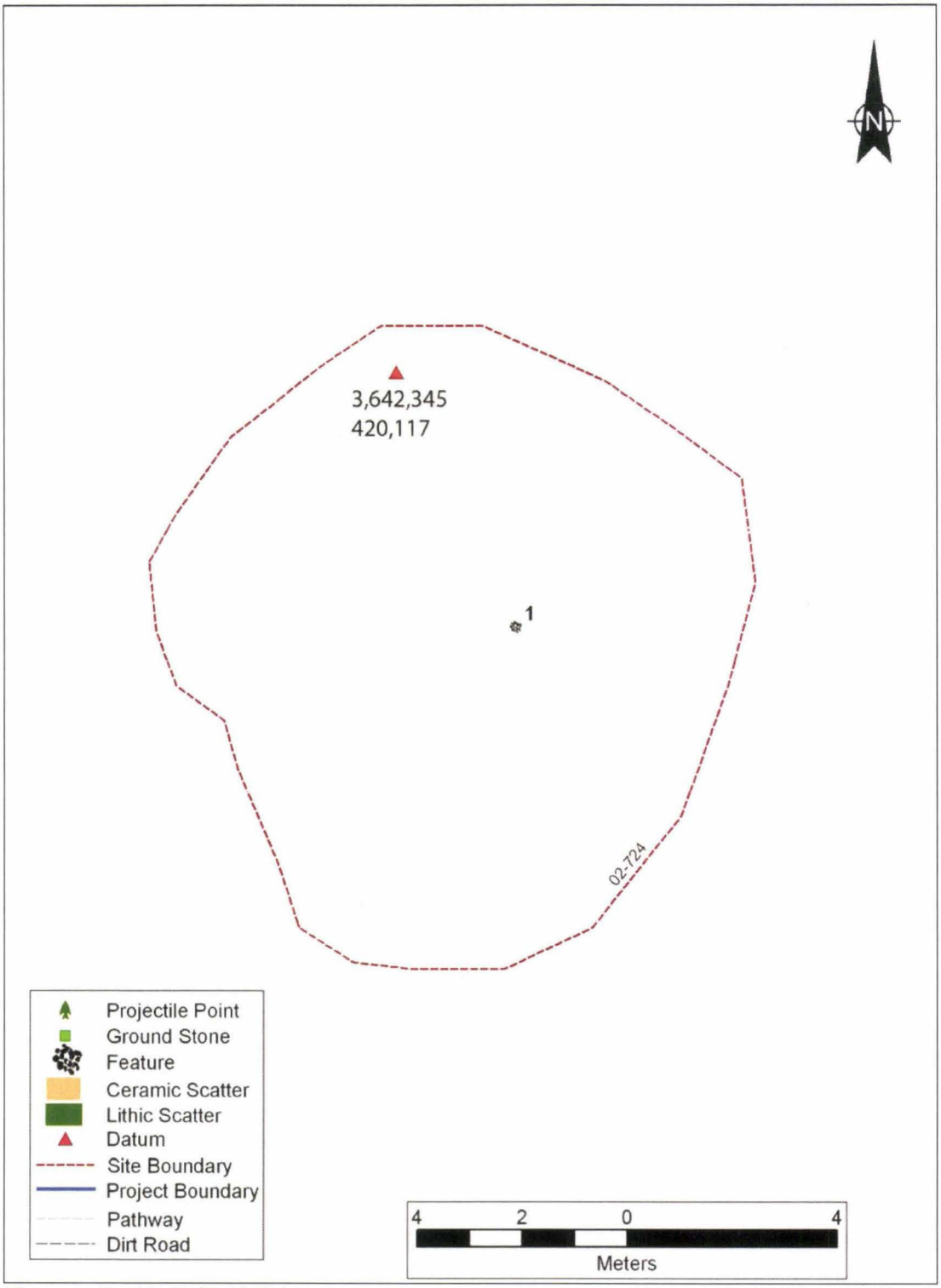


Figure A-40. AR-03-08-02-724.

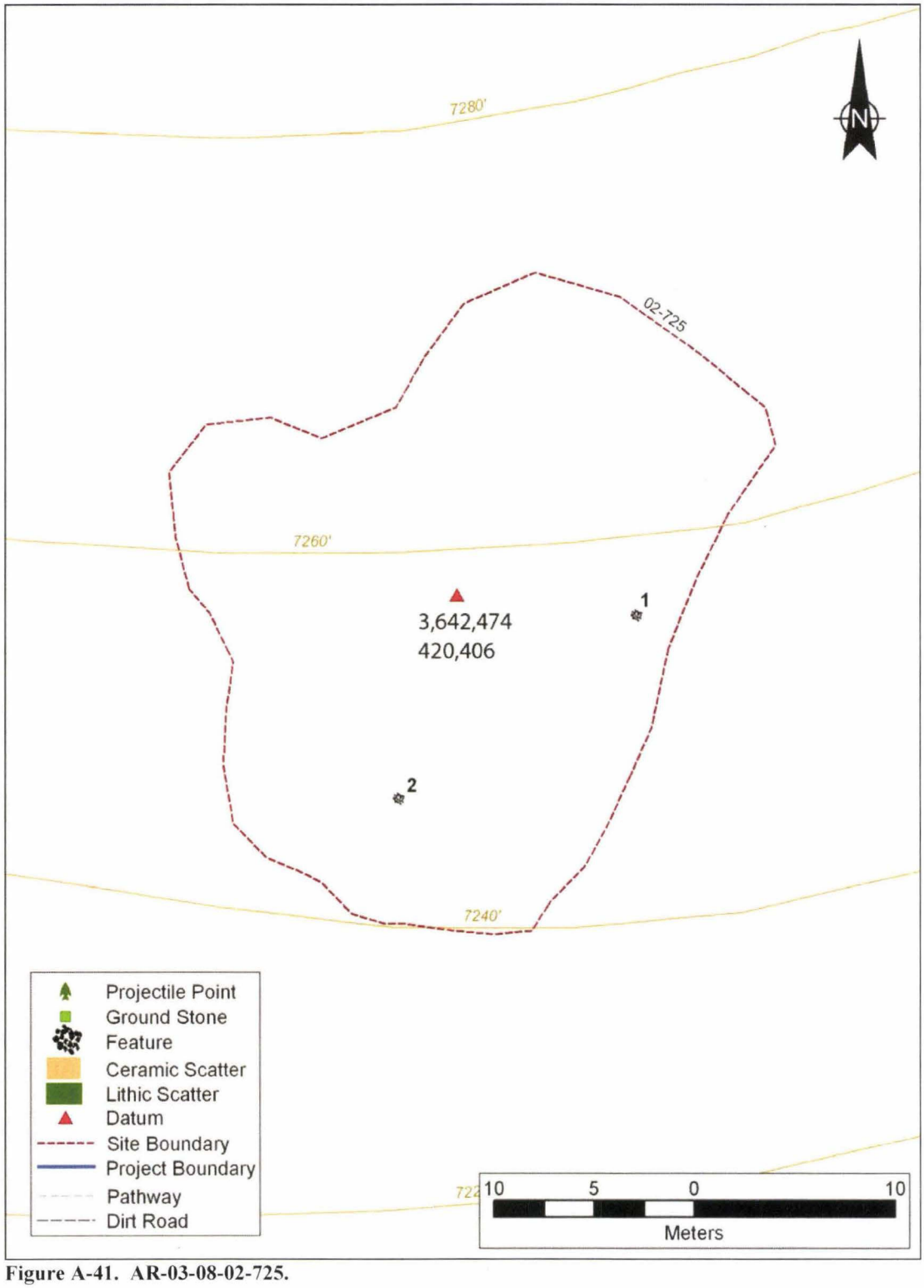


Figure A-41. AR-03-08-02-725.

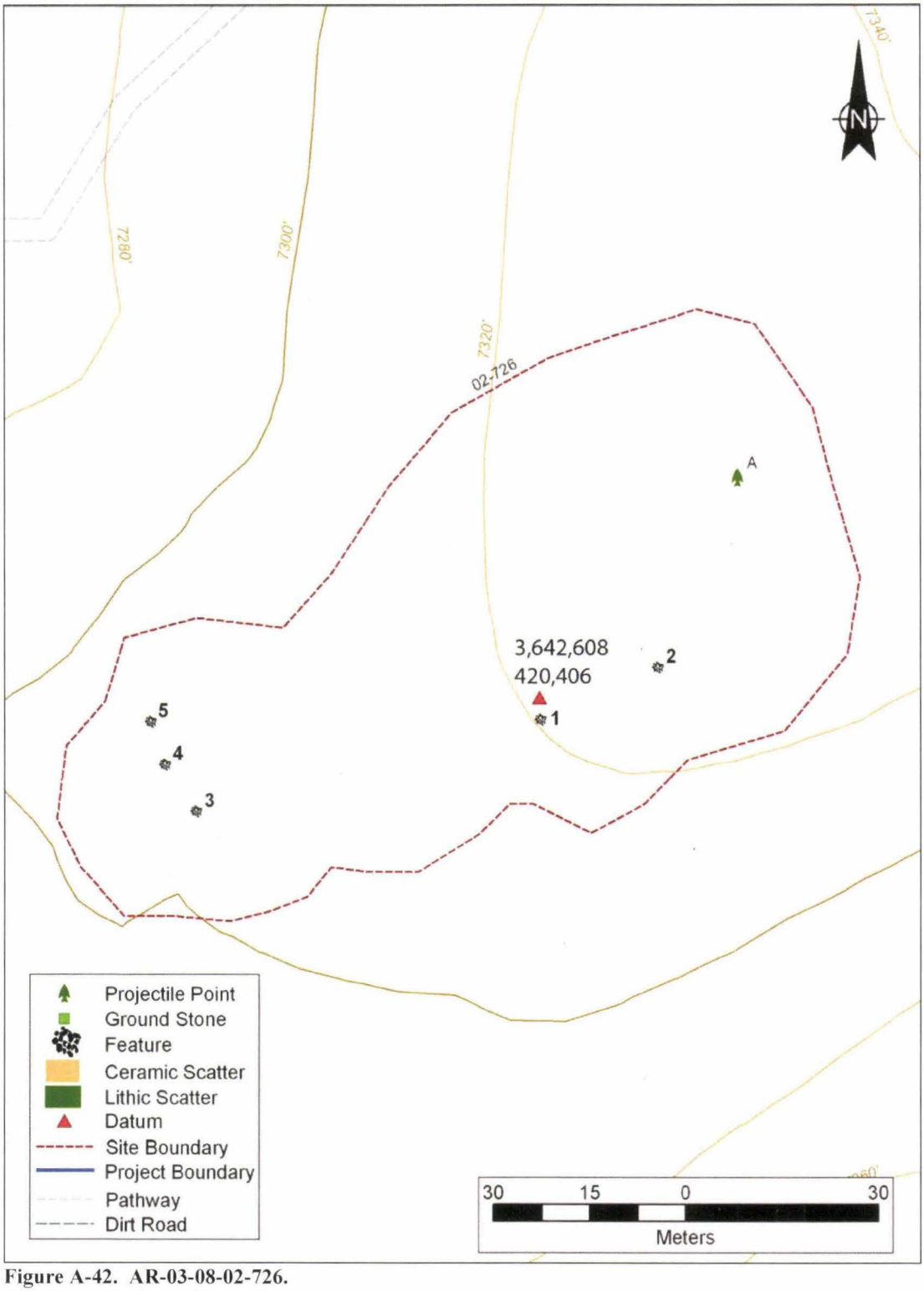


Figure A-42. AR-03-08-02-726.

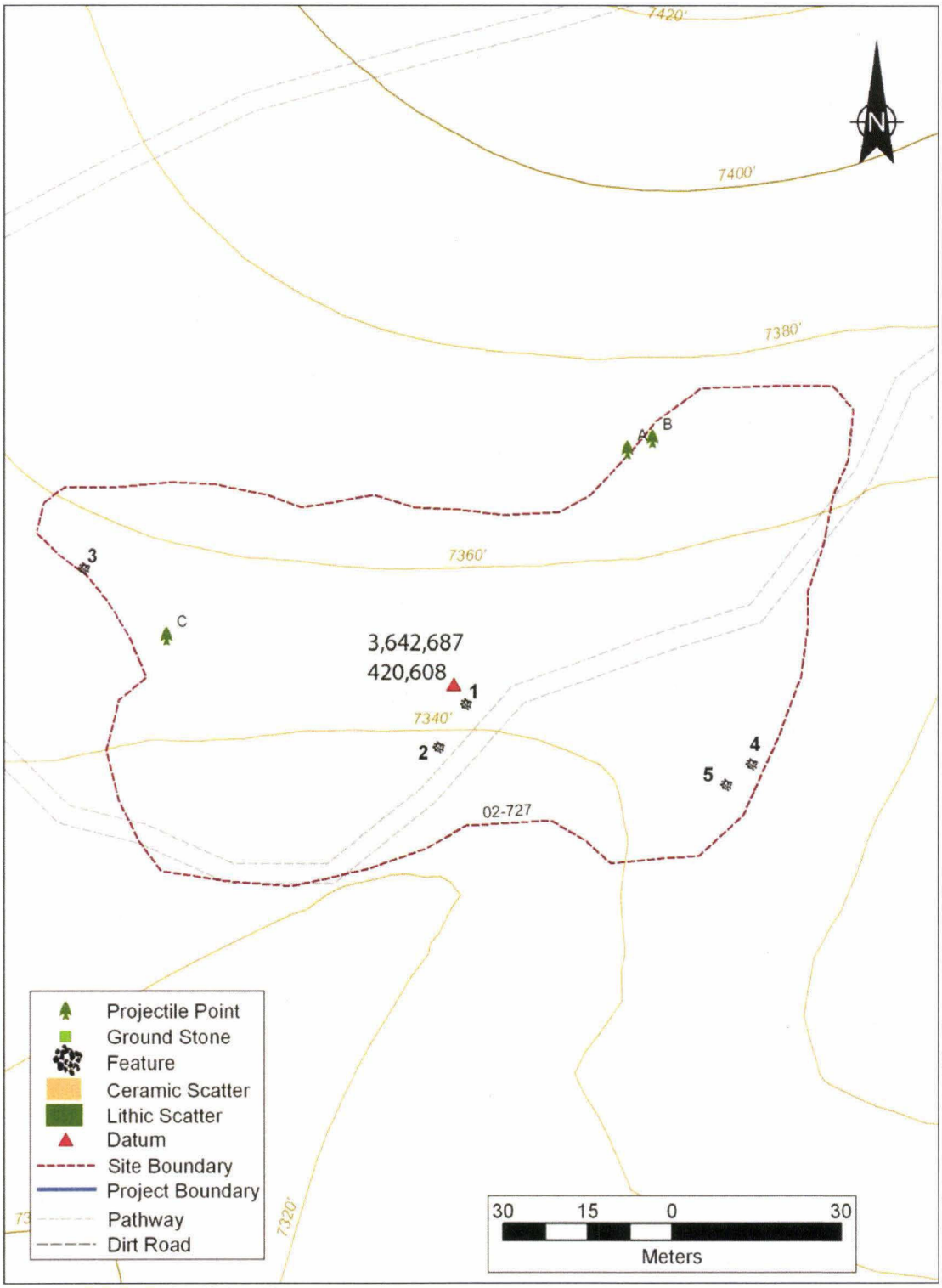


Figure A-43. AR-03-08-02-727.

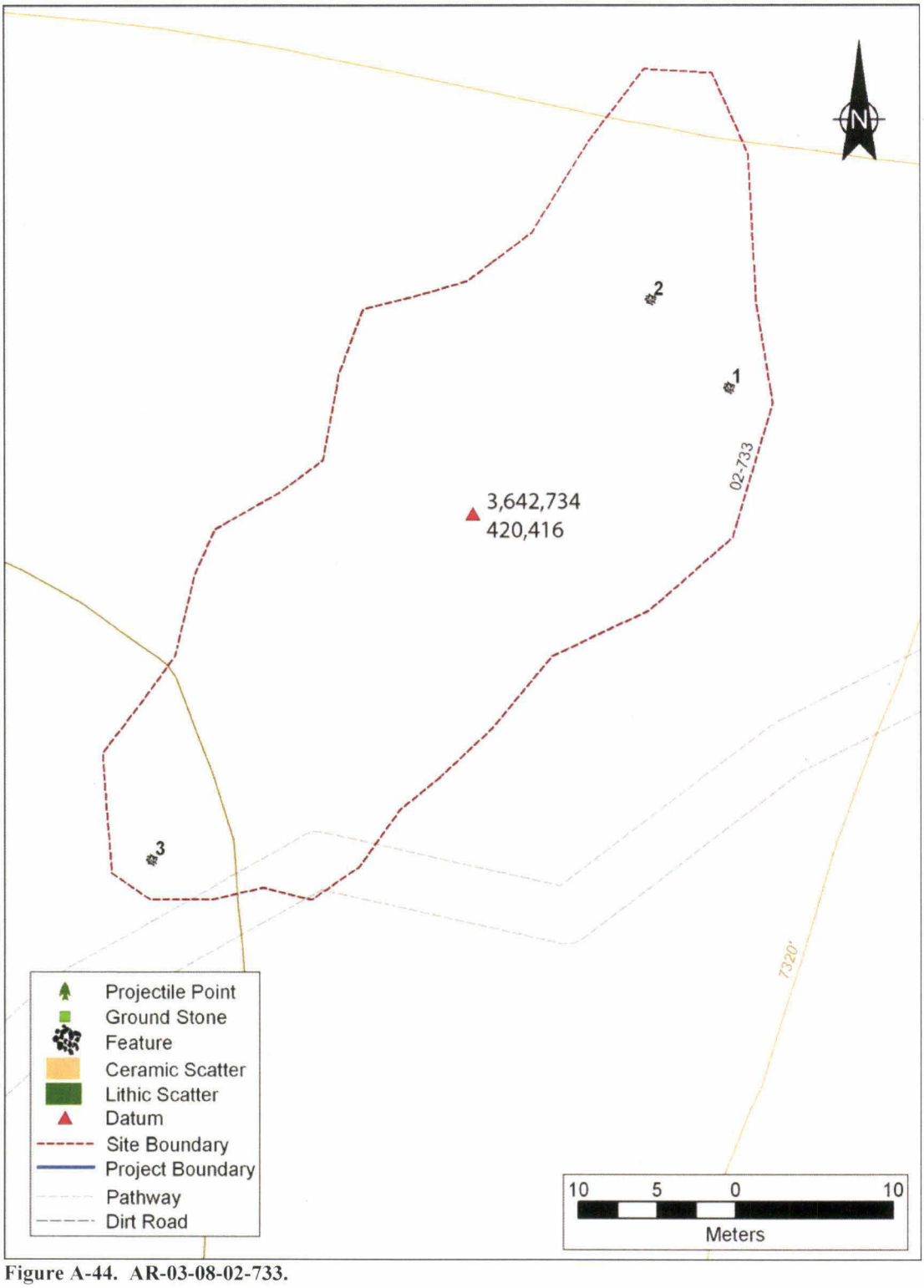


Figure A-44. AR-03-08-02-733.

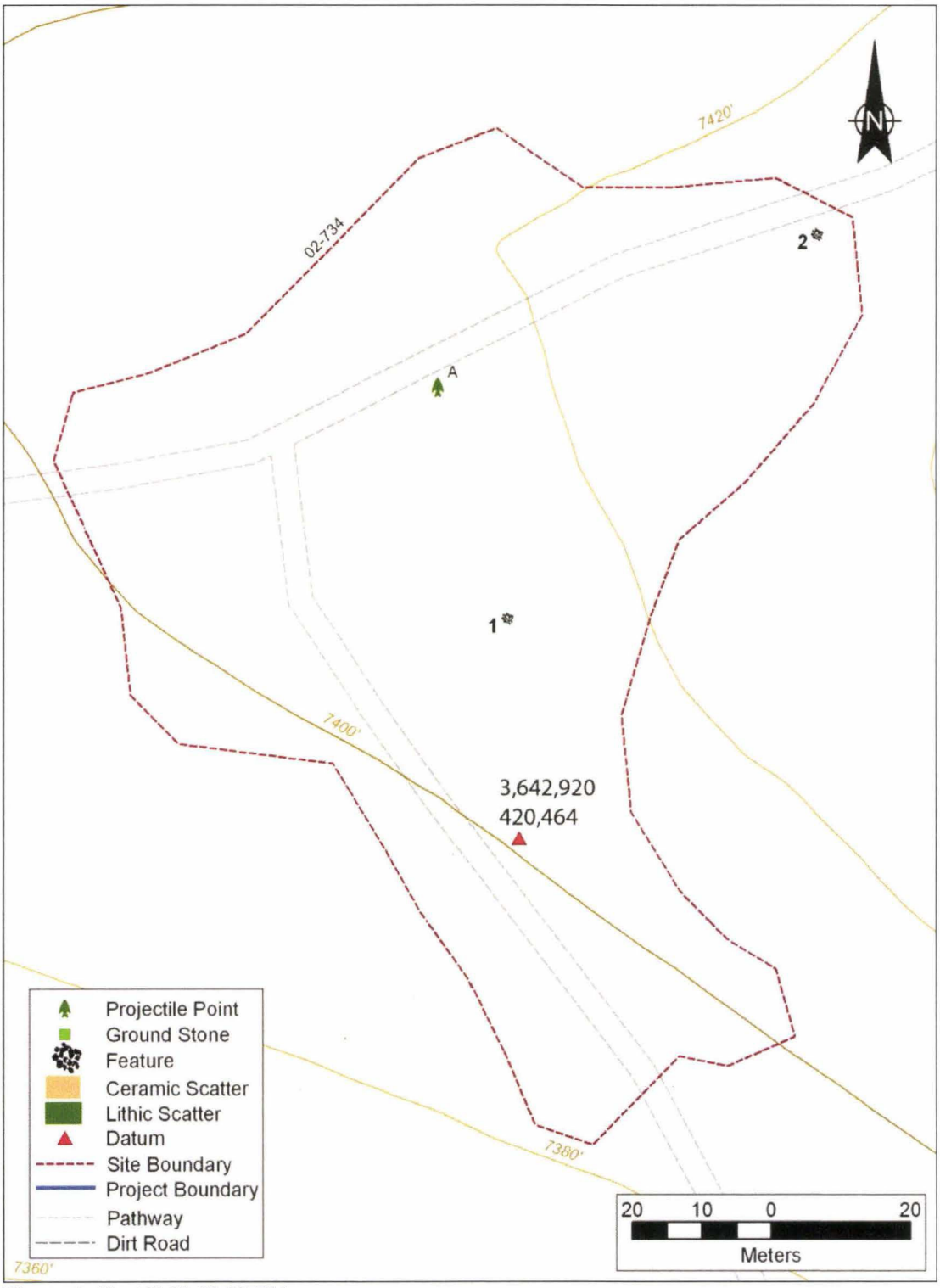


Figure A-45. AR-03-08-02-734.

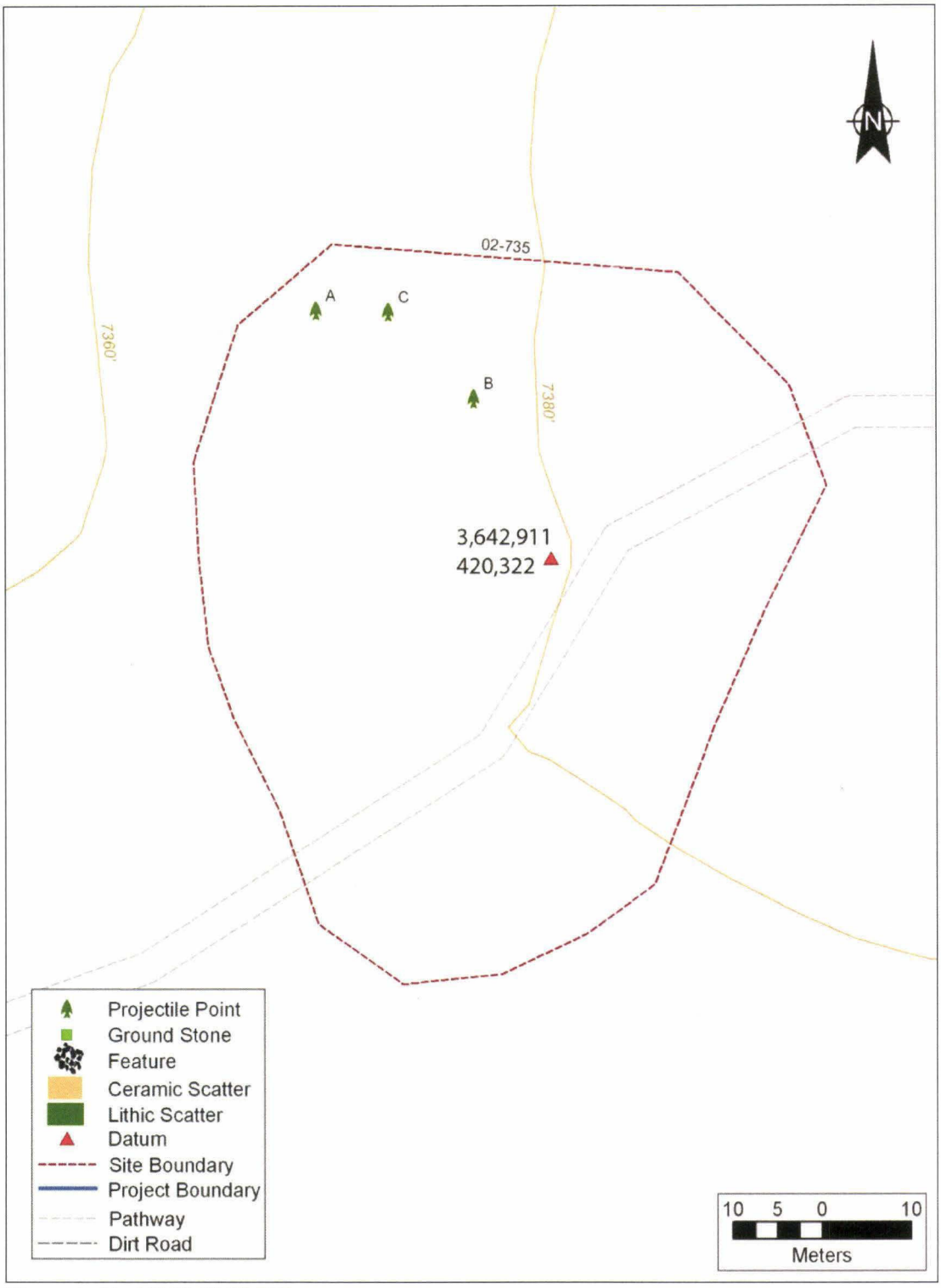
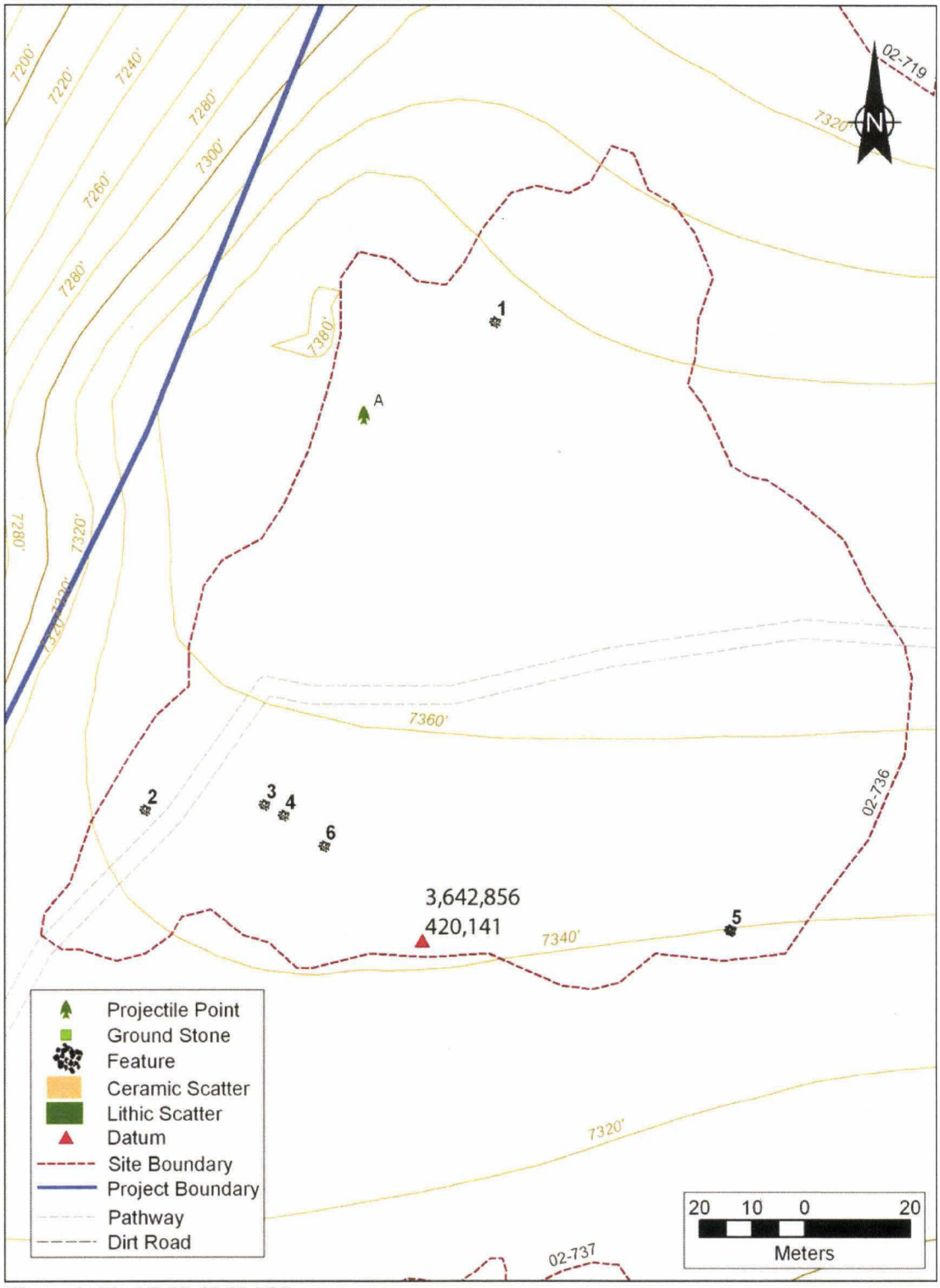


Figure A-46. AR-03-08-02-735.



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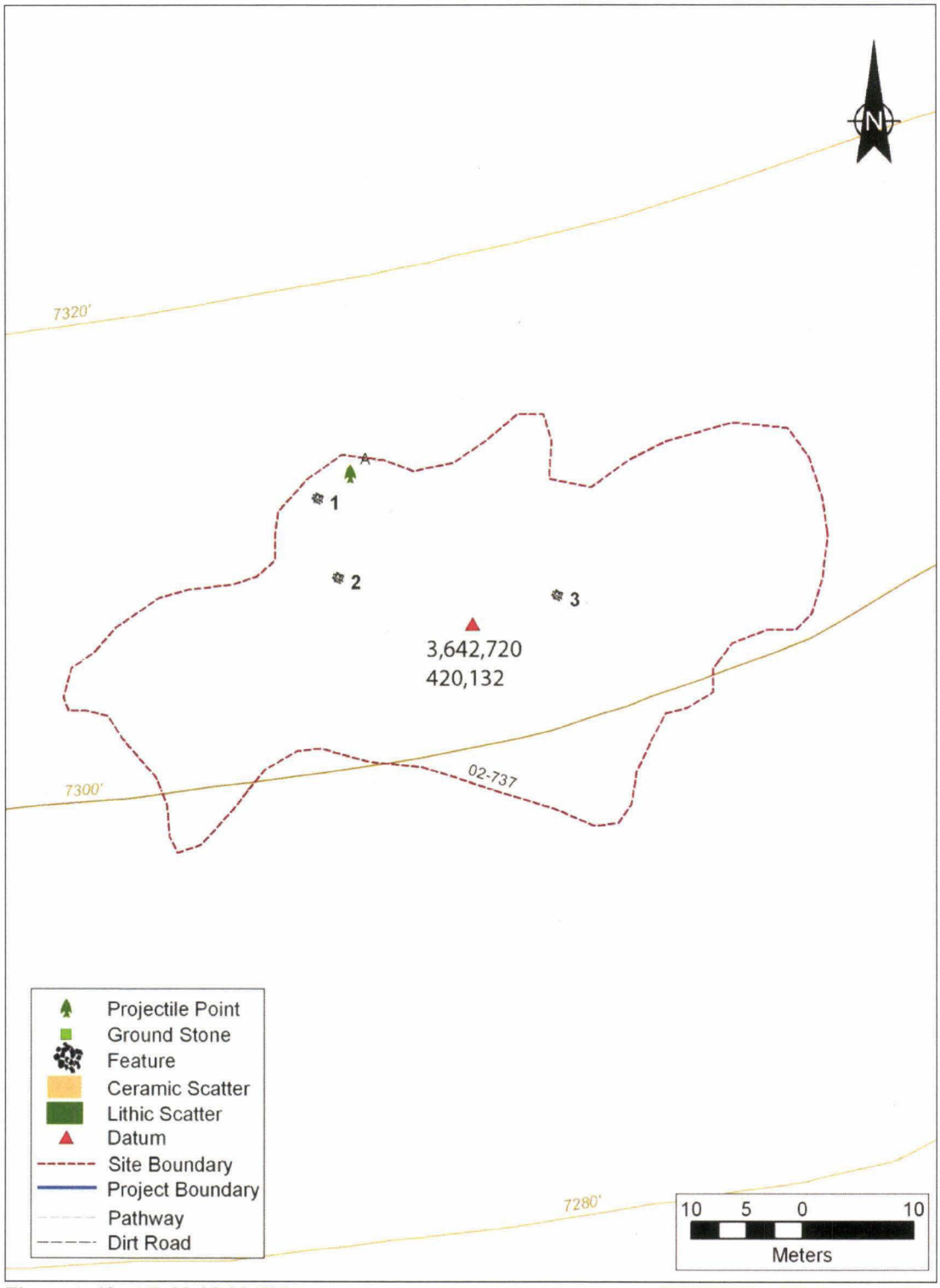

Figure A-48. AR-03-08-02-737.

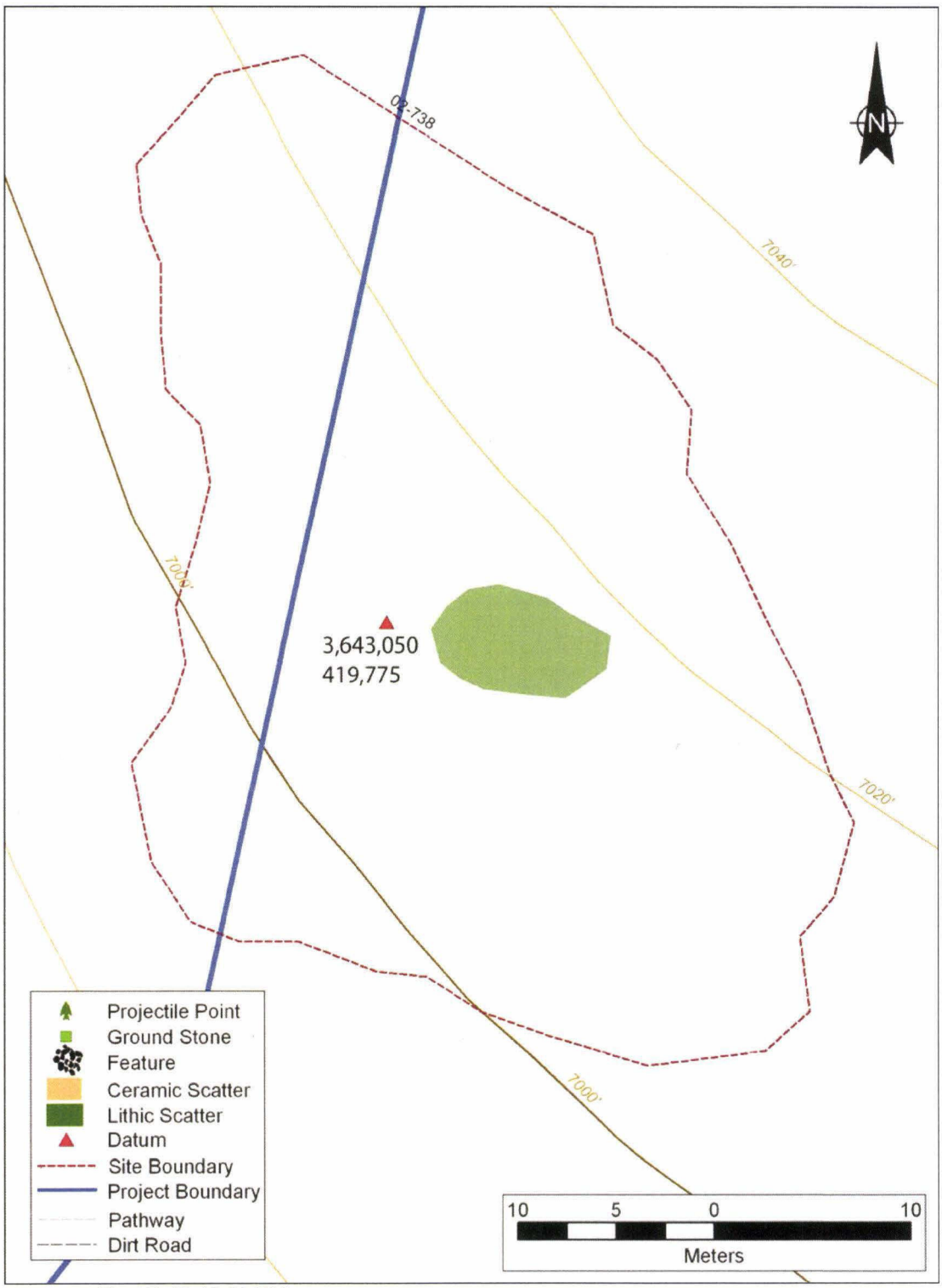

Figure A-49. AR-03-08-02-738.

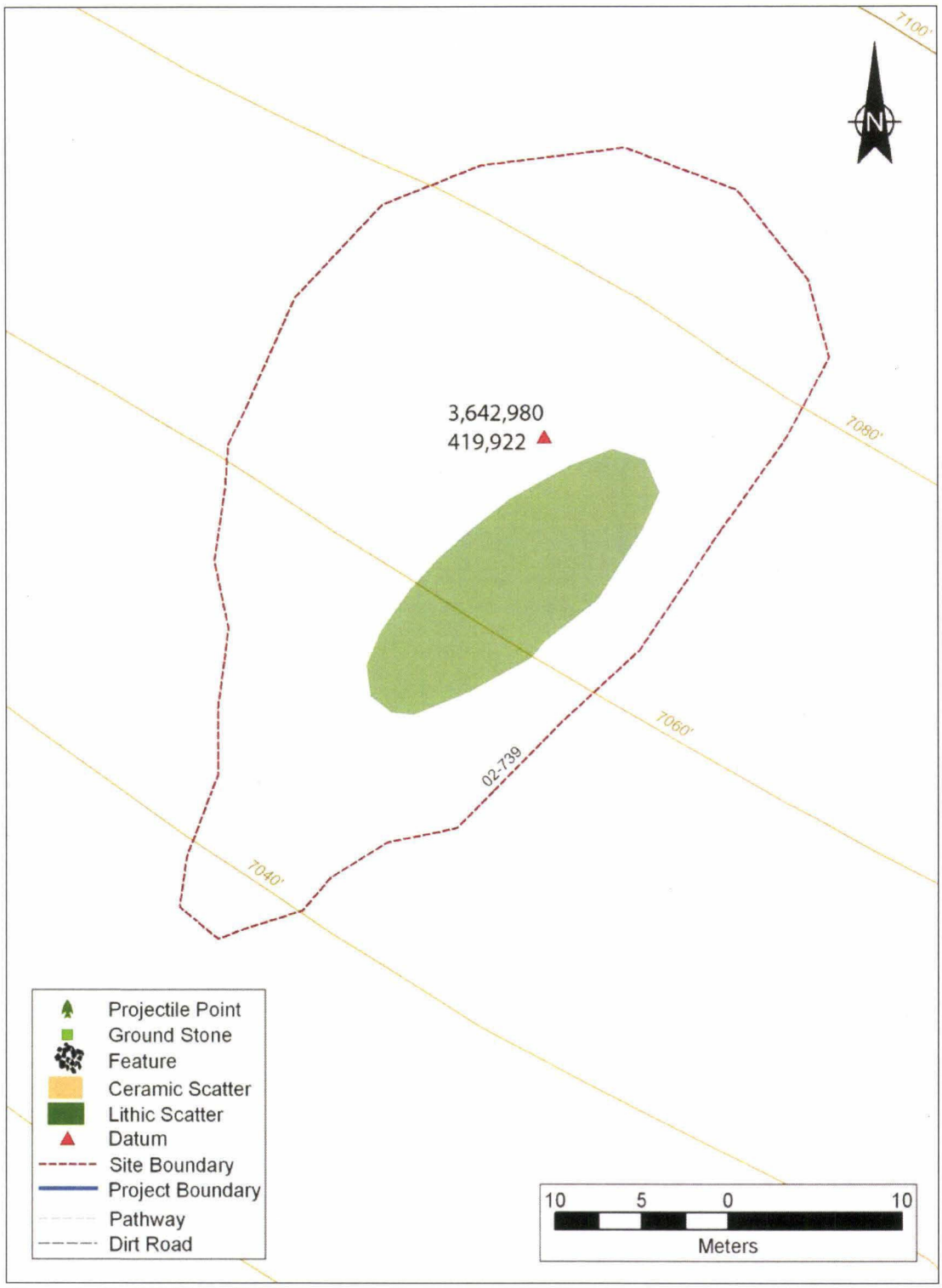

Figure A-50. AR-03-08-02-739.

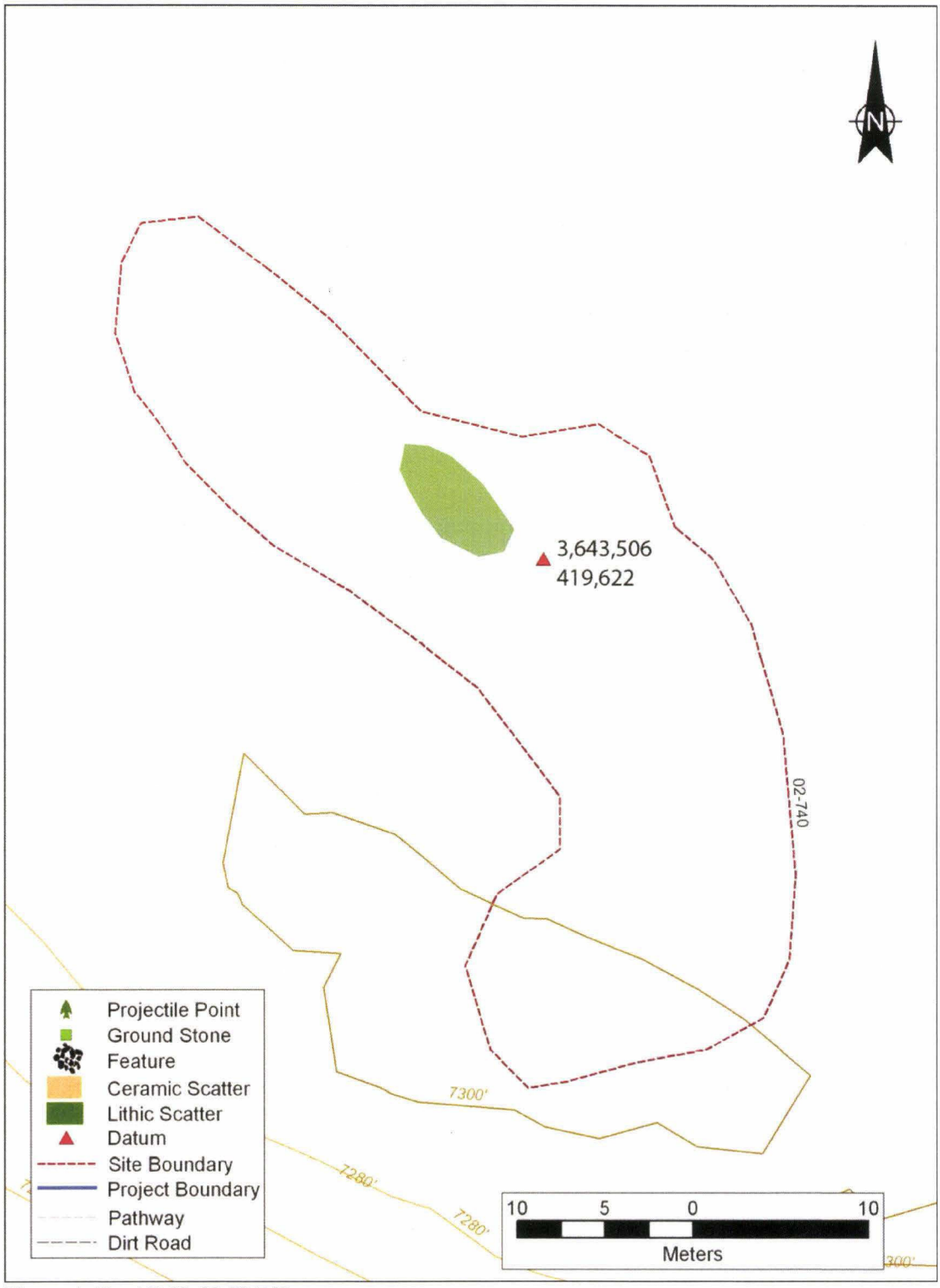

Figure A-51. AR-03-08-02-740.

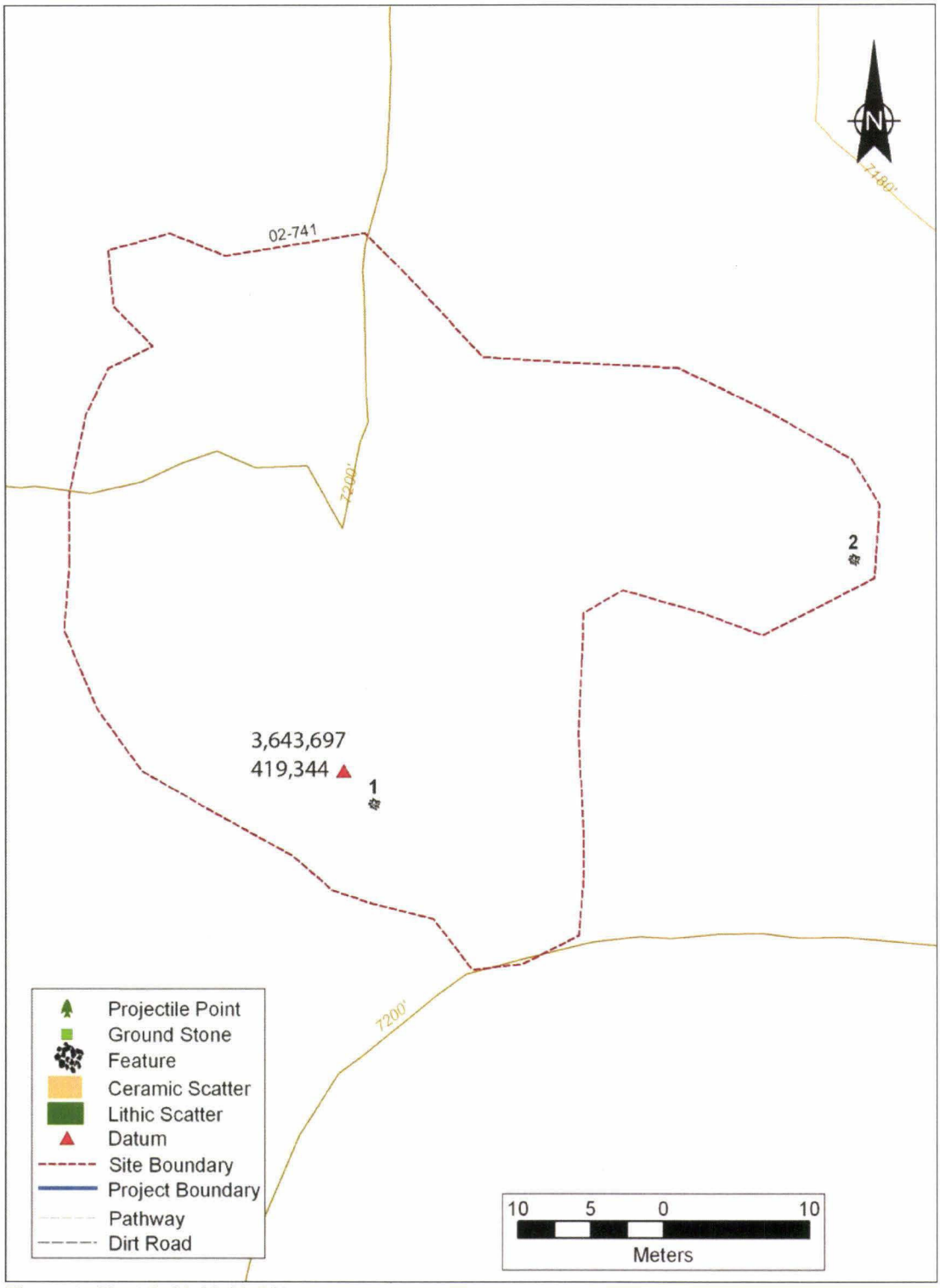

Figure A-52. AR-03-08-02-741.

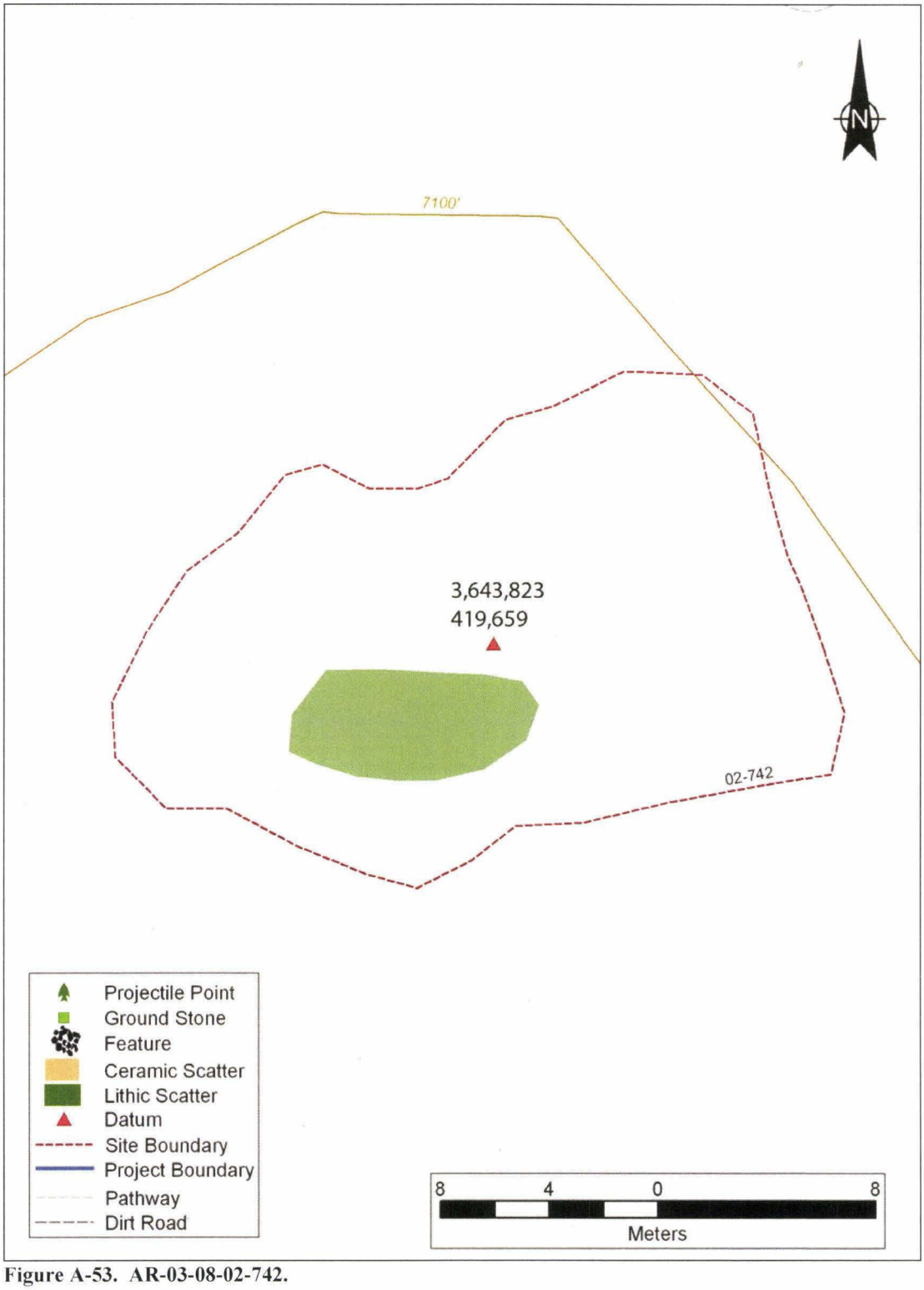

Figure A-53. AR-03-08-02-742.

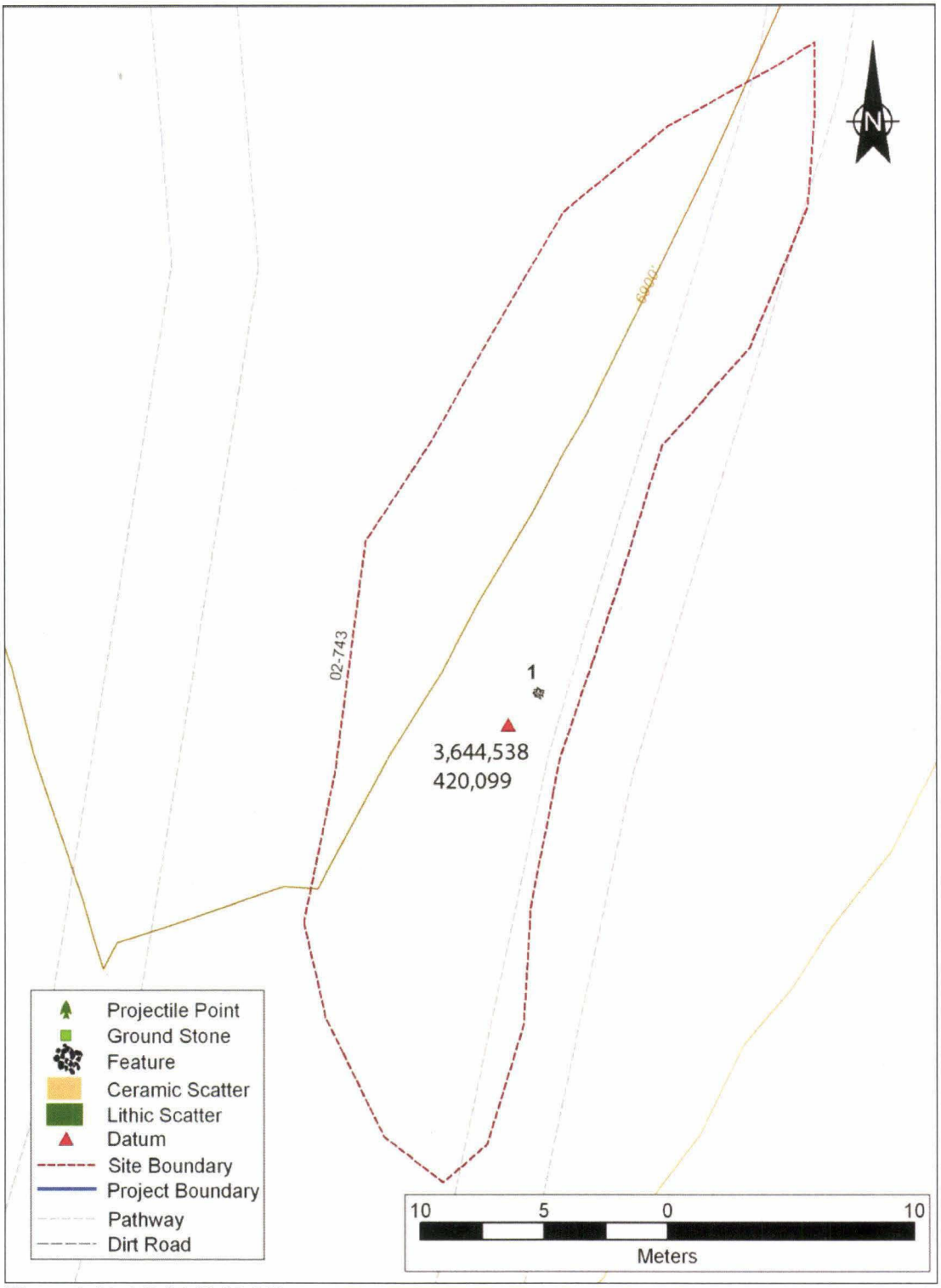

Figure A-54 AR-03-08-02-743

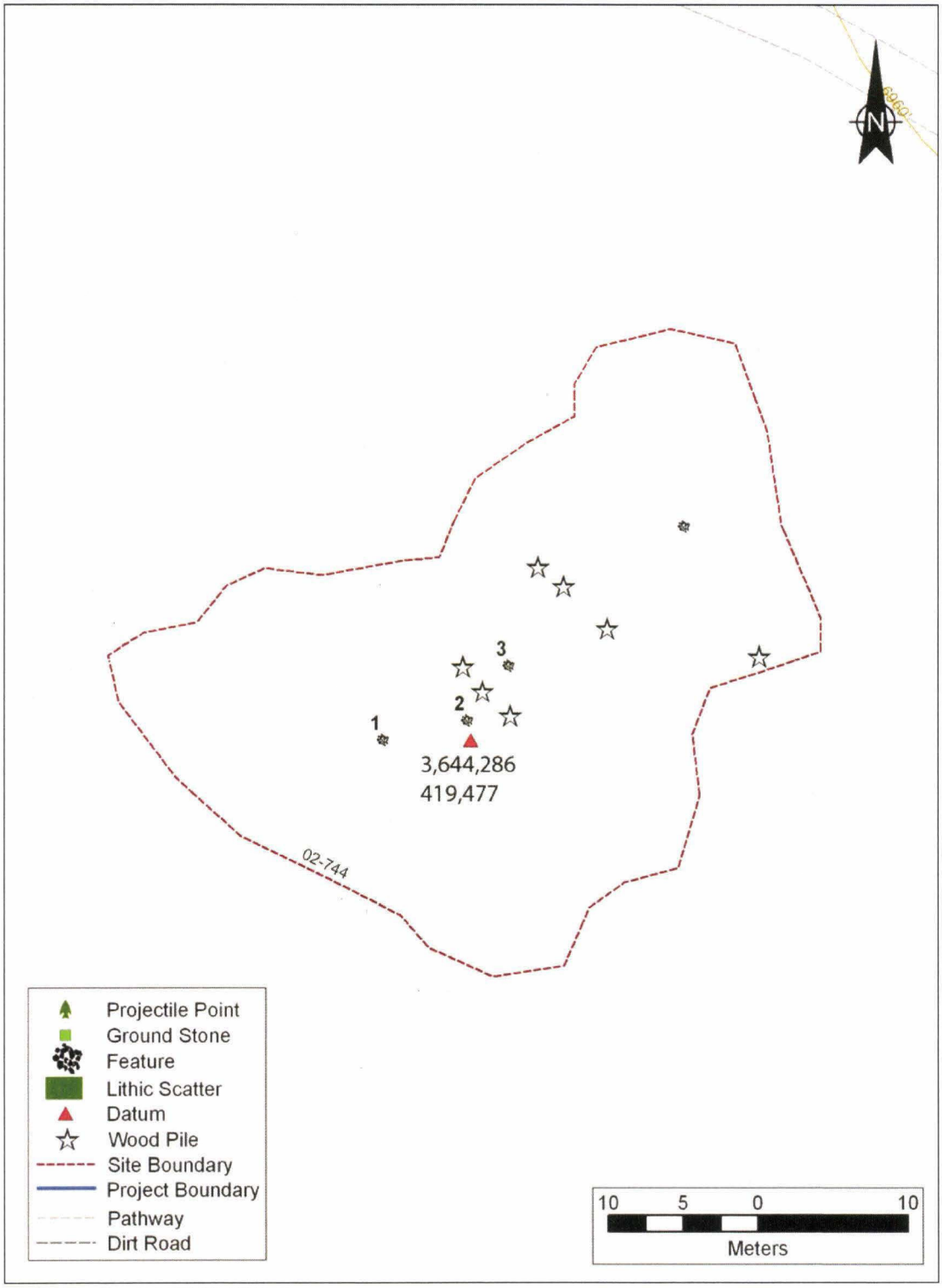

Figure A-55. AR-03-08-02-744.

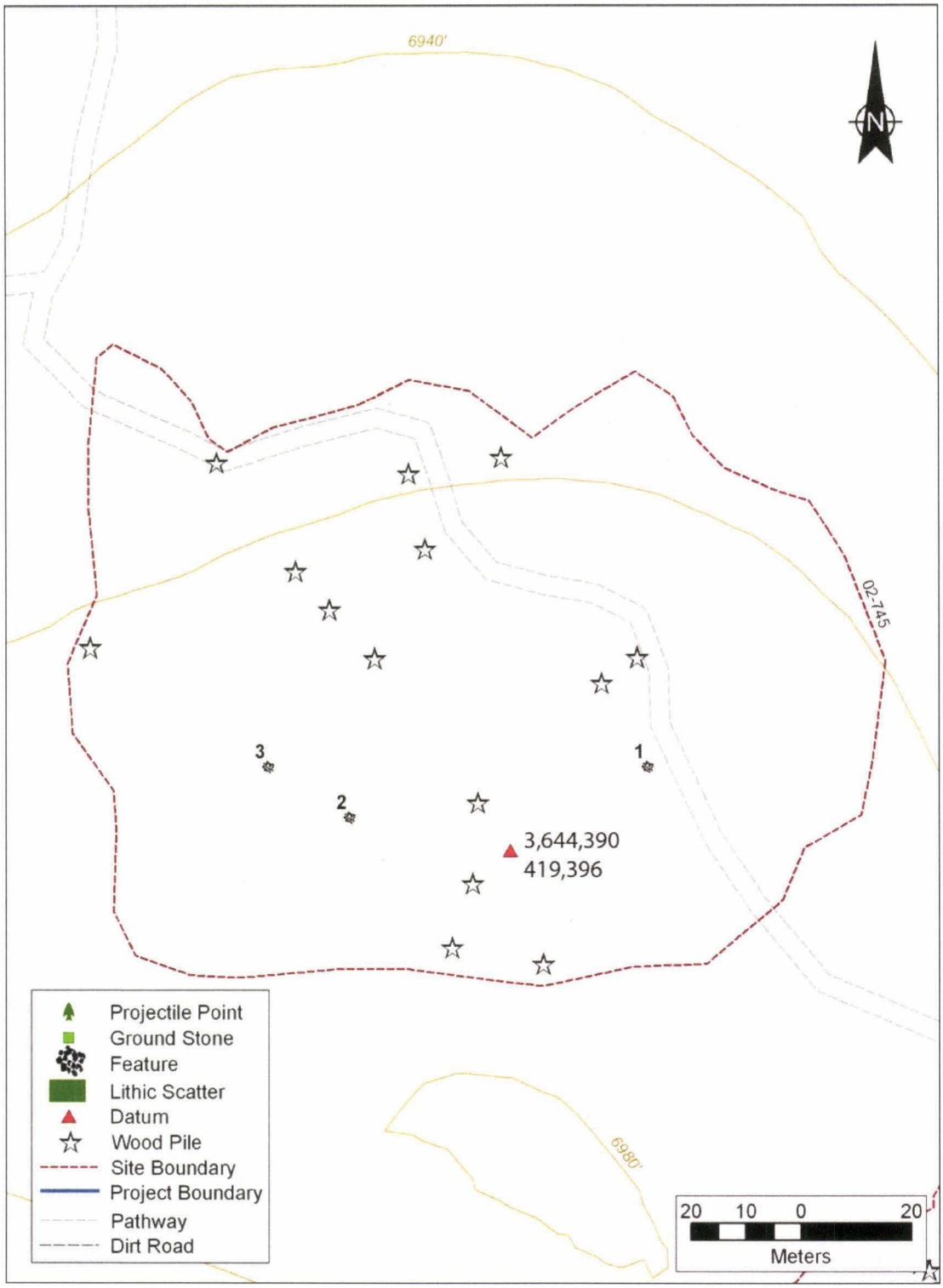

Figure A-56. AR-03-08-02-745.

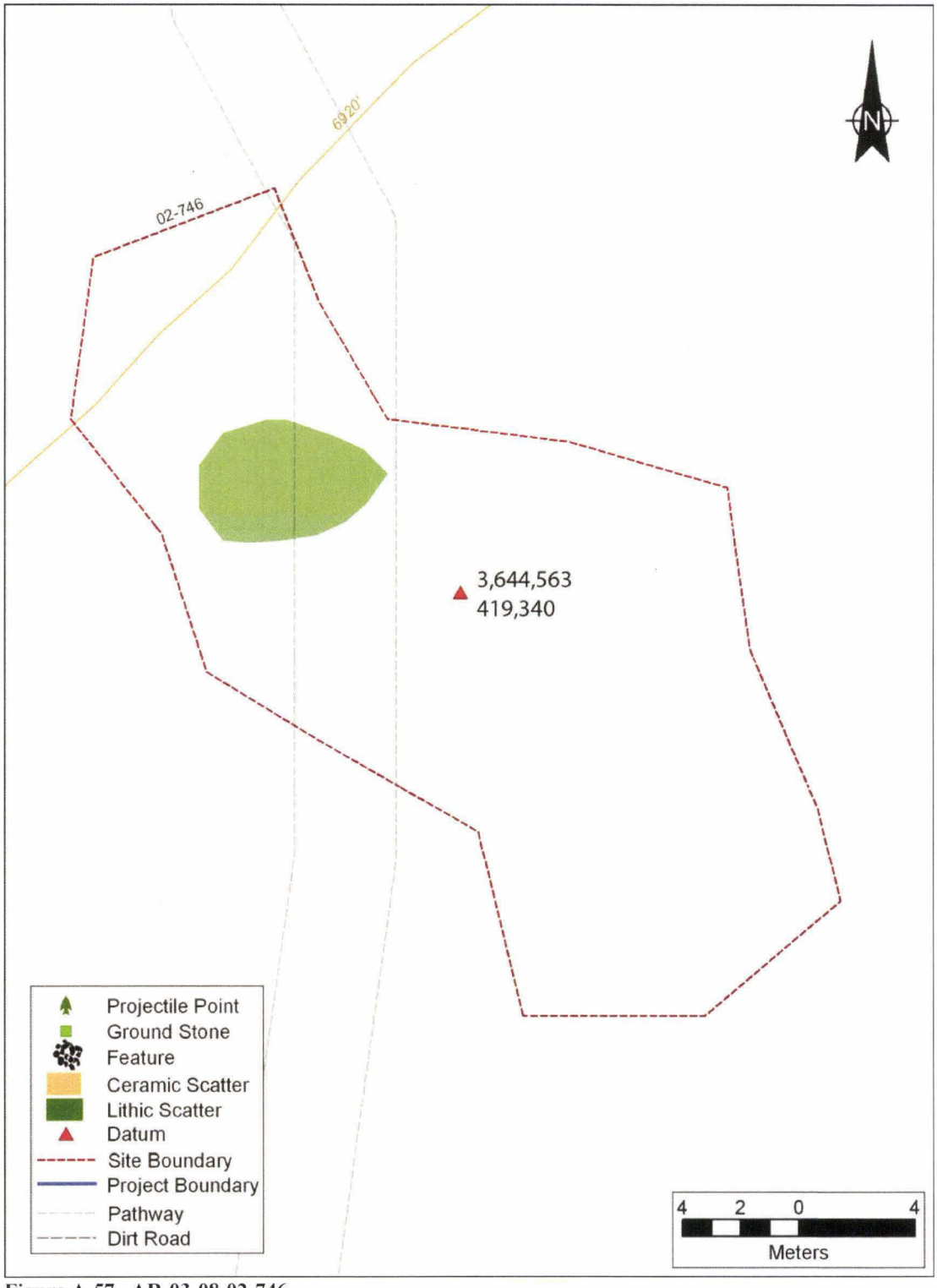

Figure A-57. AR-03-08-02-746.

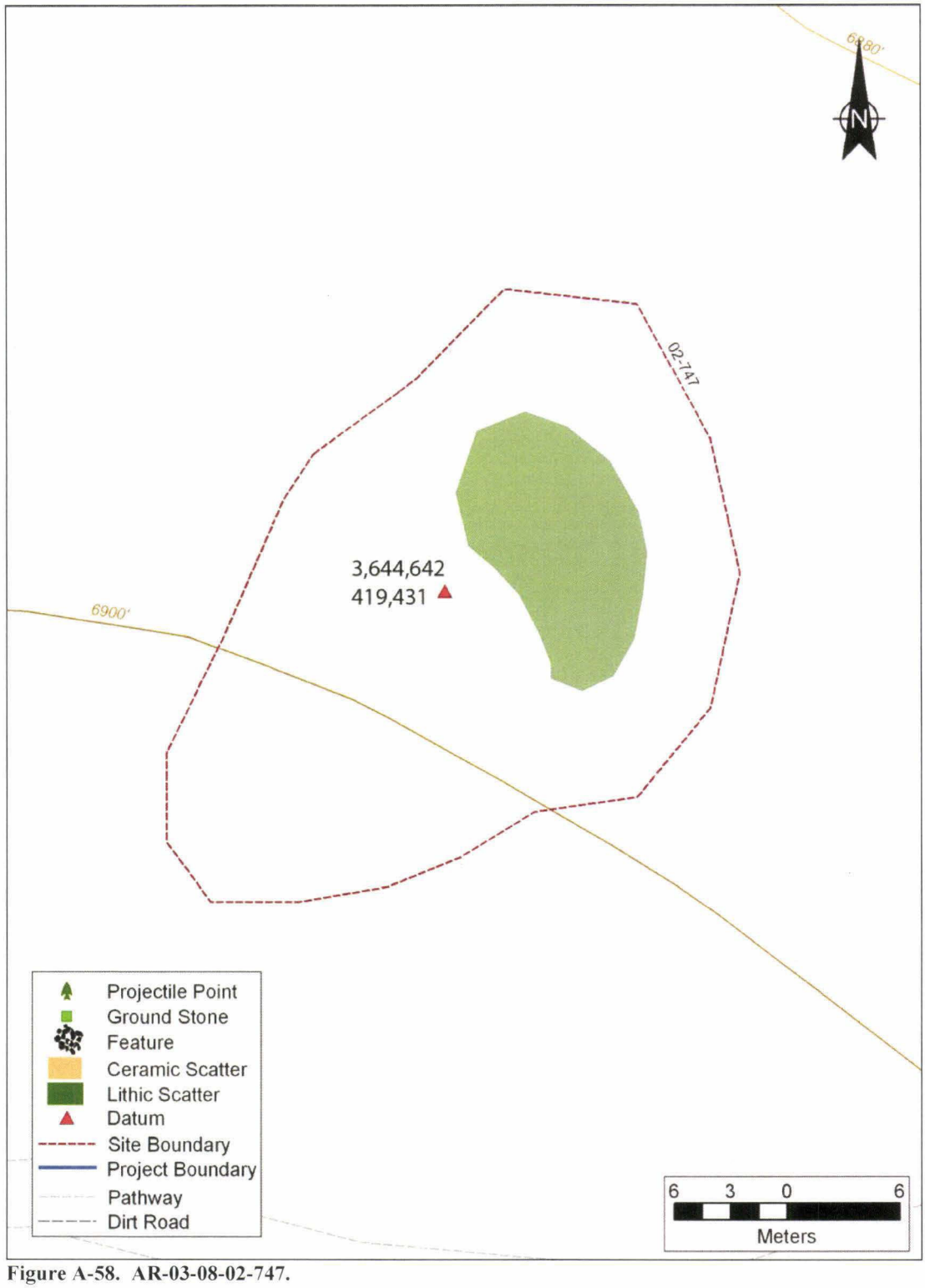

Figure A-58. AR-03-08-02-747.

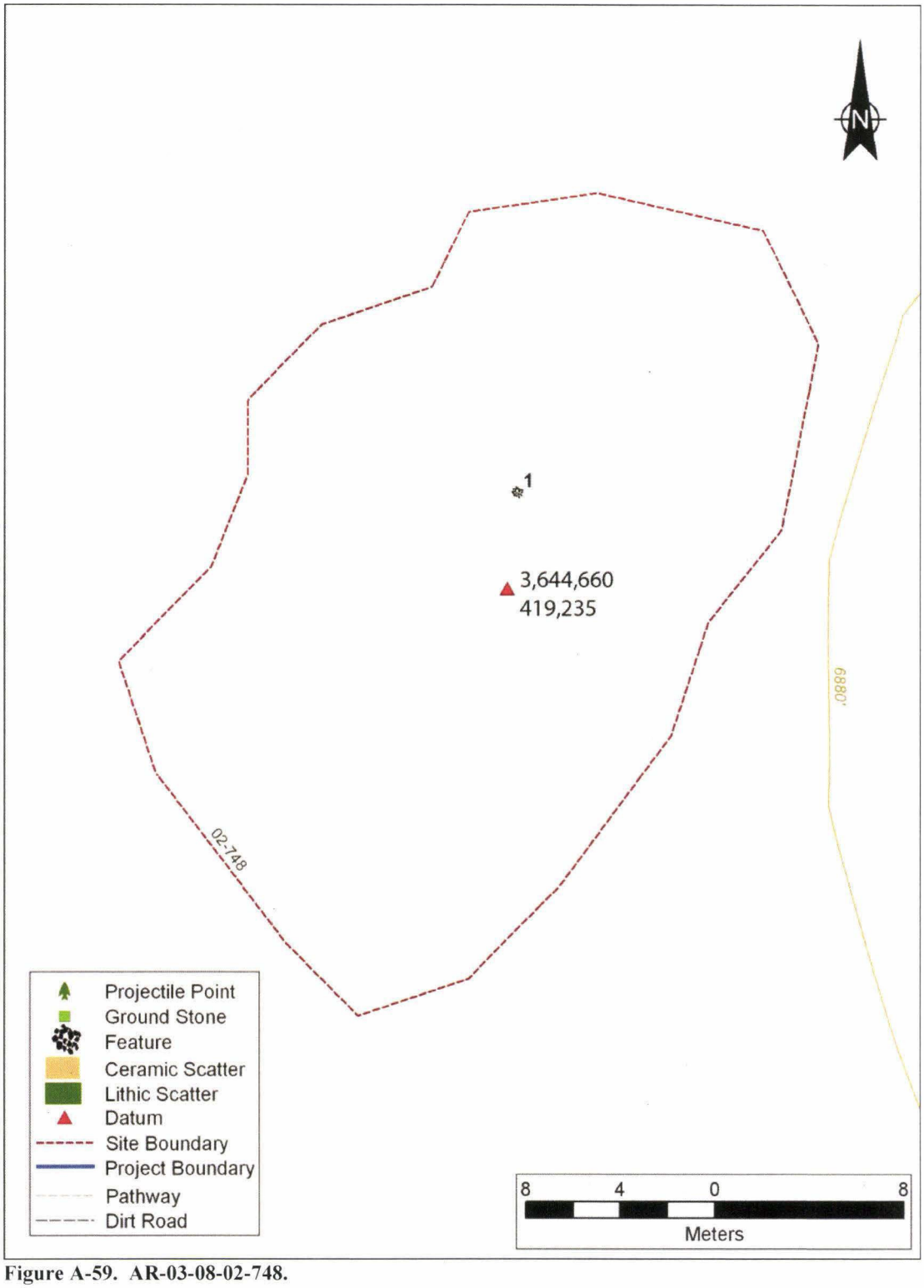

Figure A-59. AR-03-08-02-748.

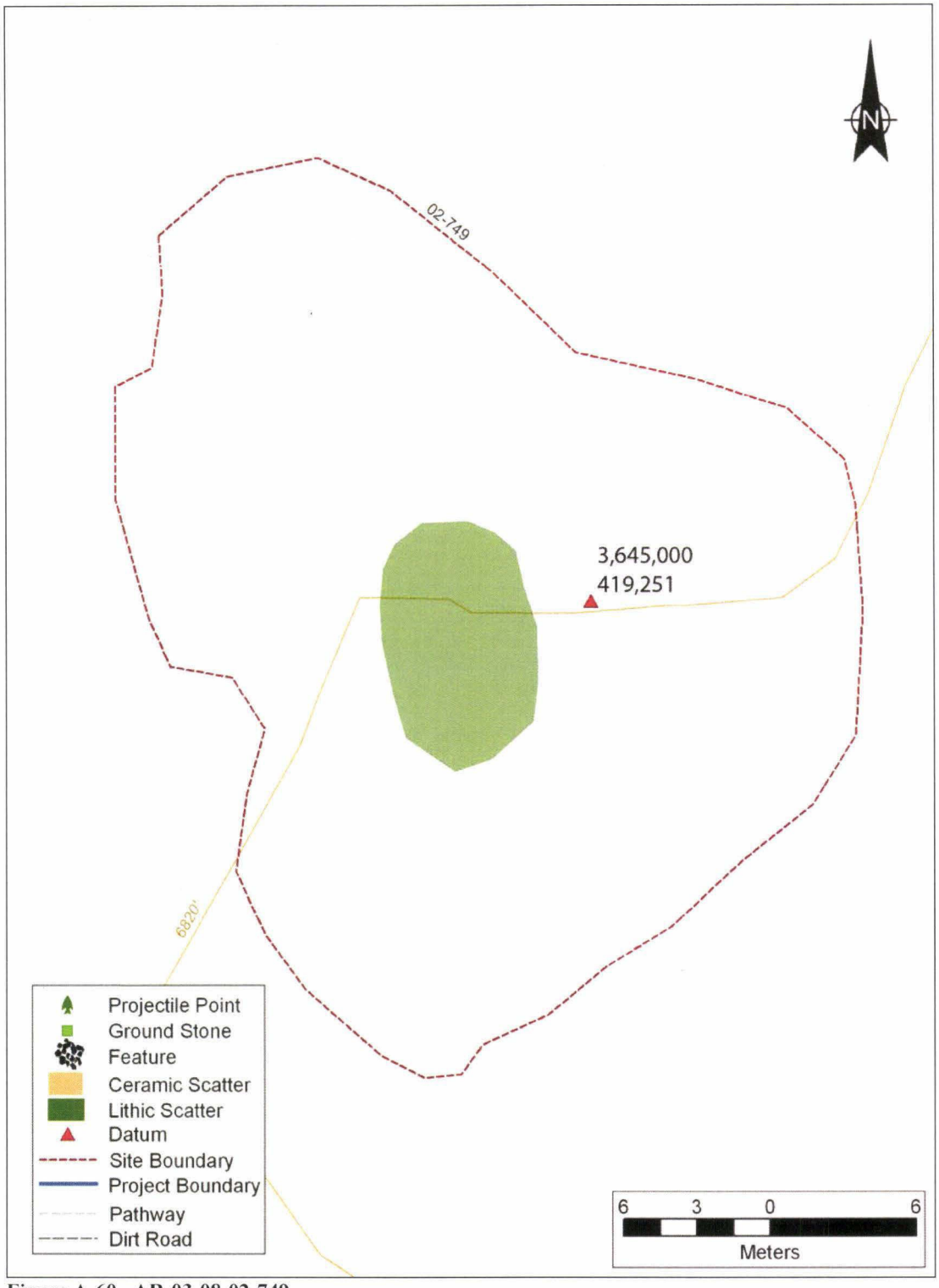

Figure A-60. AR-03-08-02-749.

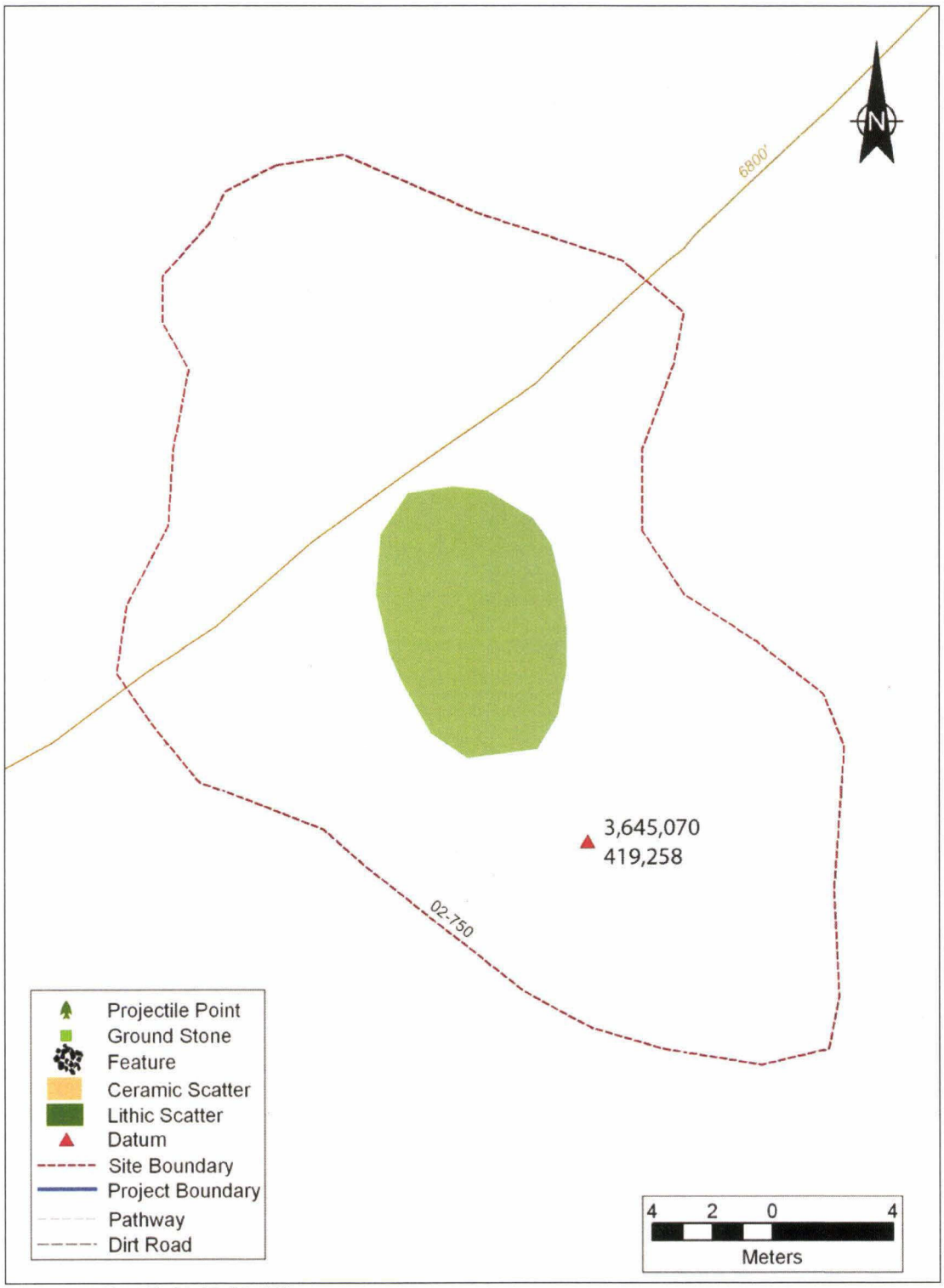

Figure A-61. AR-03-08-02-750.

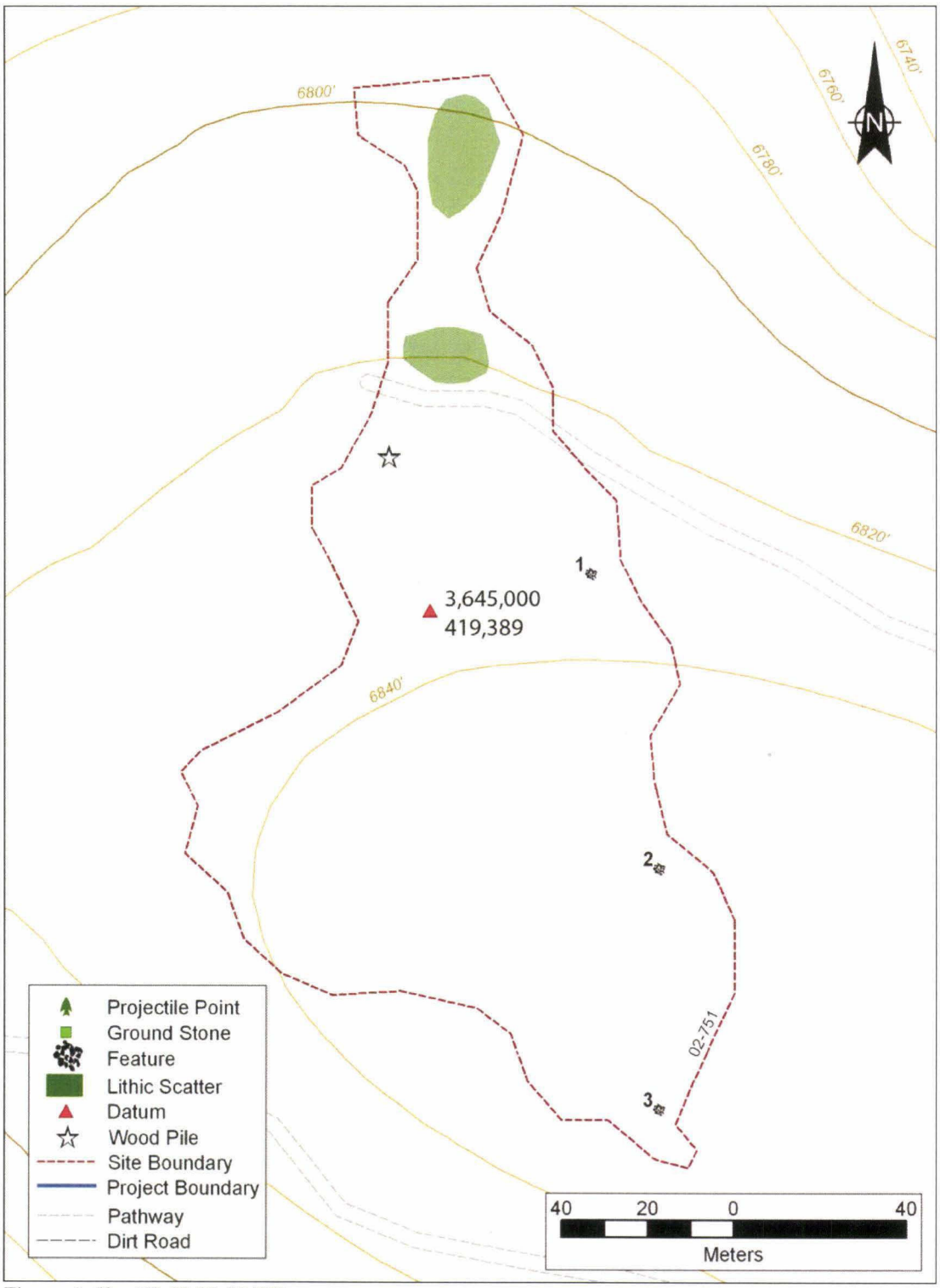

Figure A-62. AR-03-08-02-751.

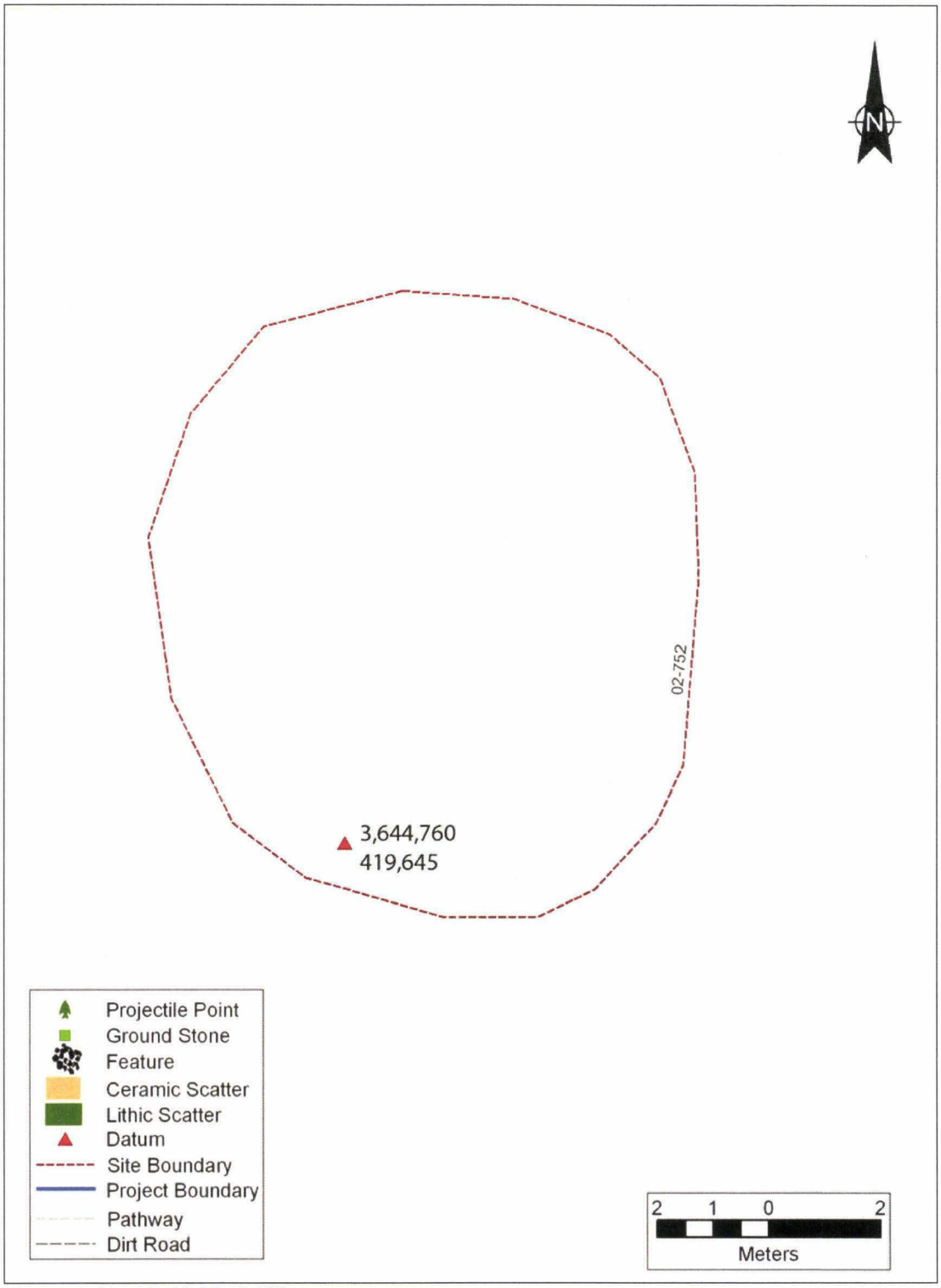

Figure A-63. AR-03-08-02-752.

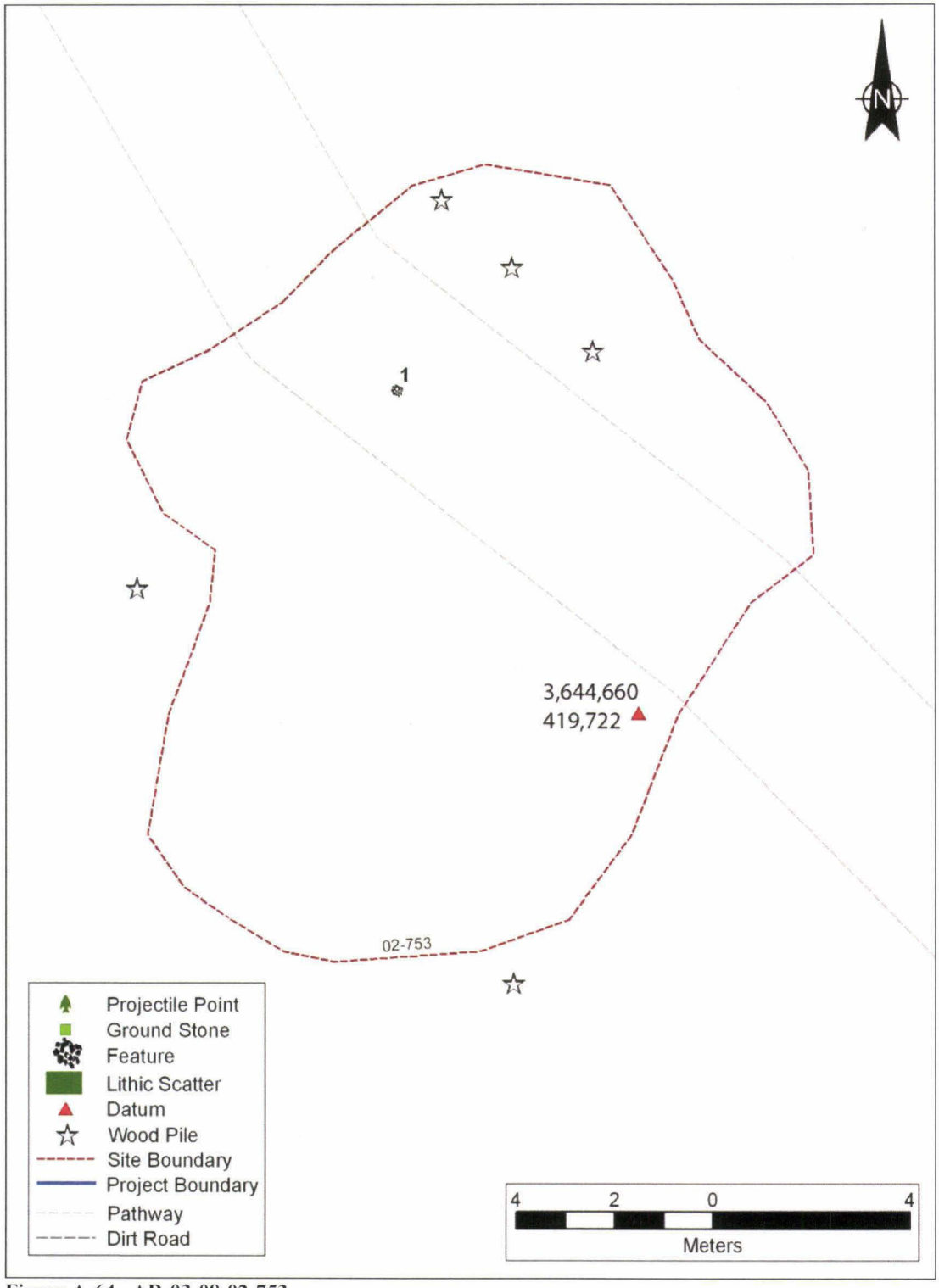

Figure A-64. AR-03-08-02-753.

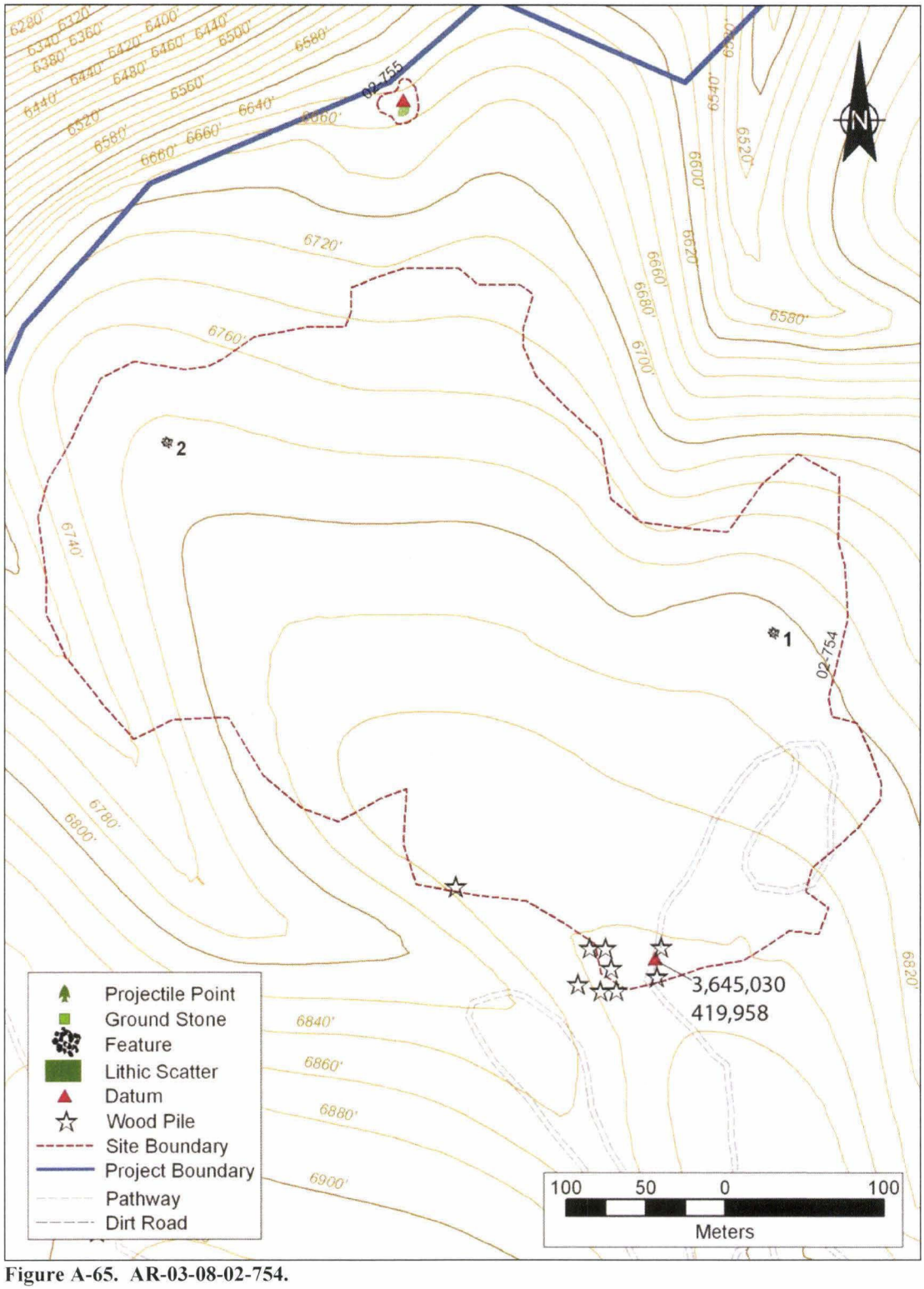

Figure A-65. AR-03-08-02-754.

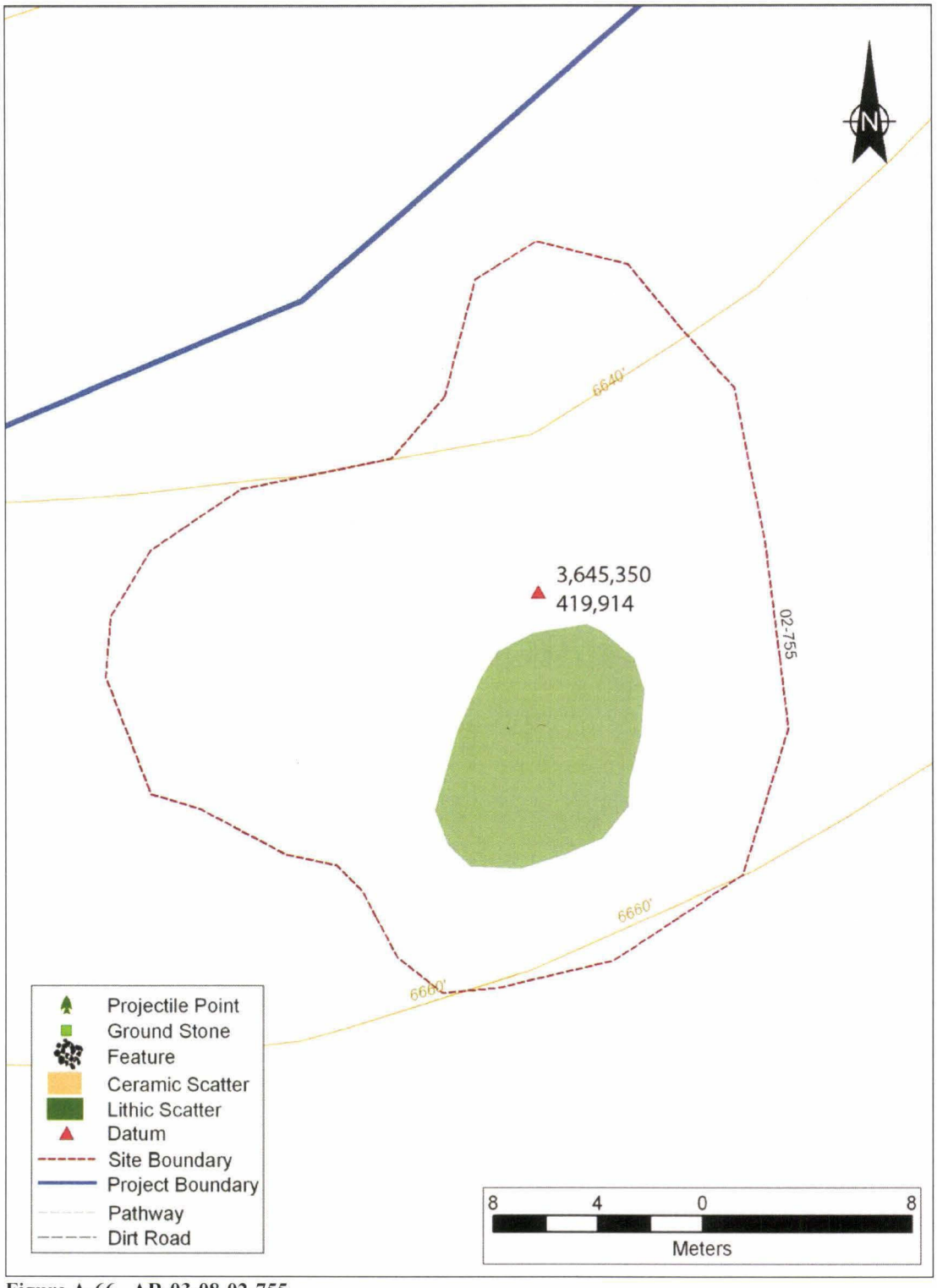

Figure A-66. AR-03-08-02-755.

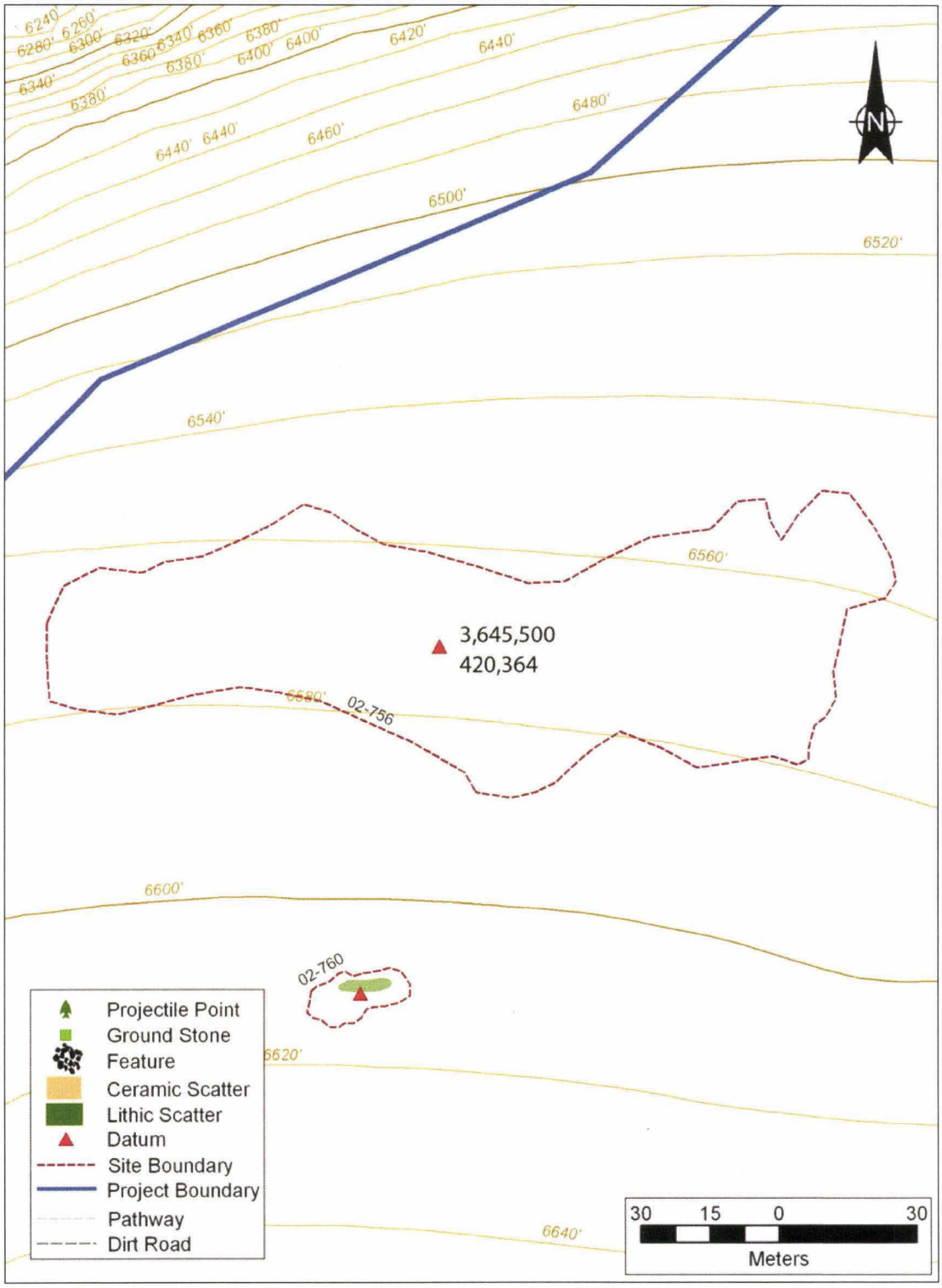

Figure A-67. AR-03-08-02-756.

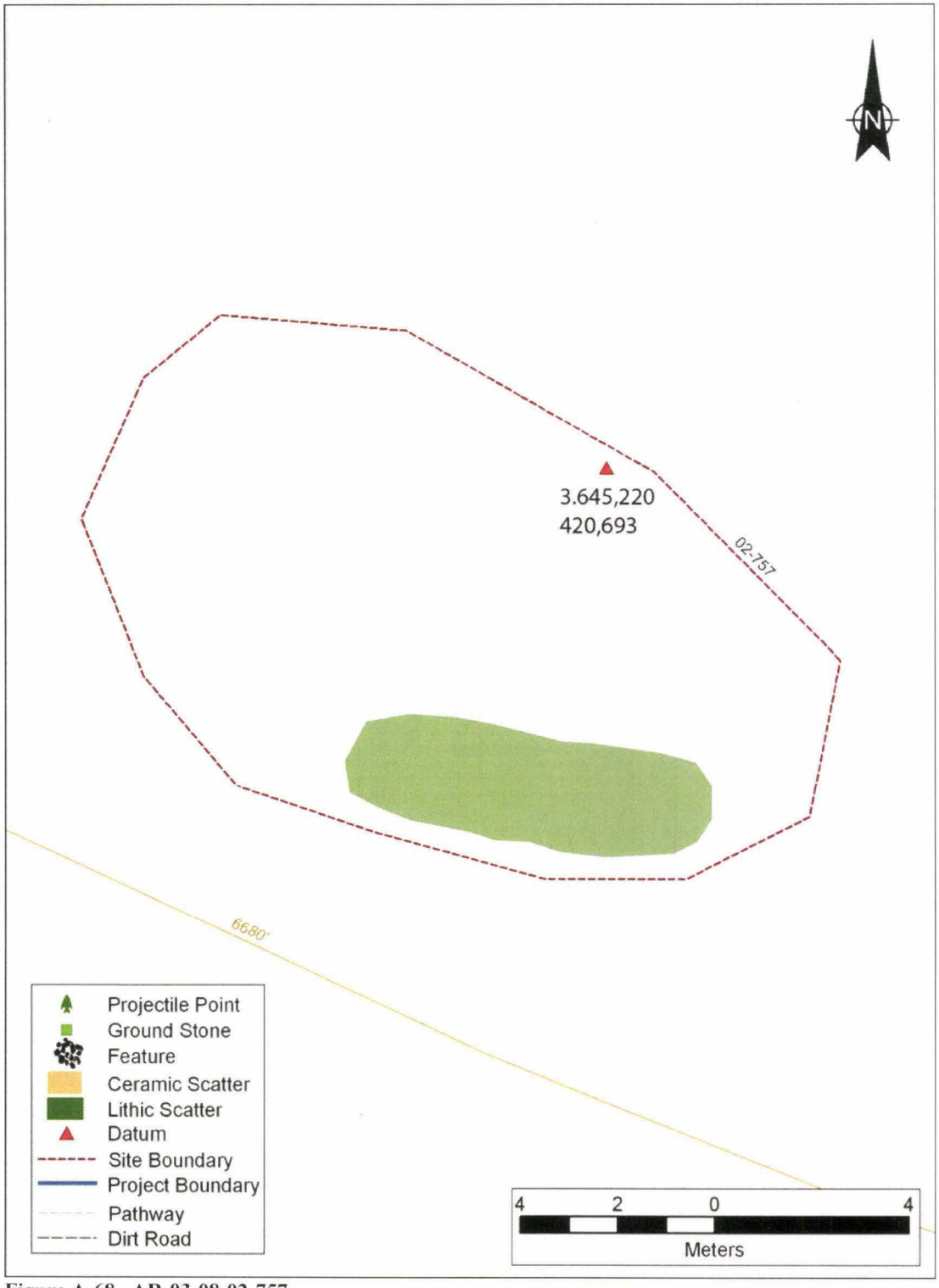

Figure A-68. AR-03-08-02-757.

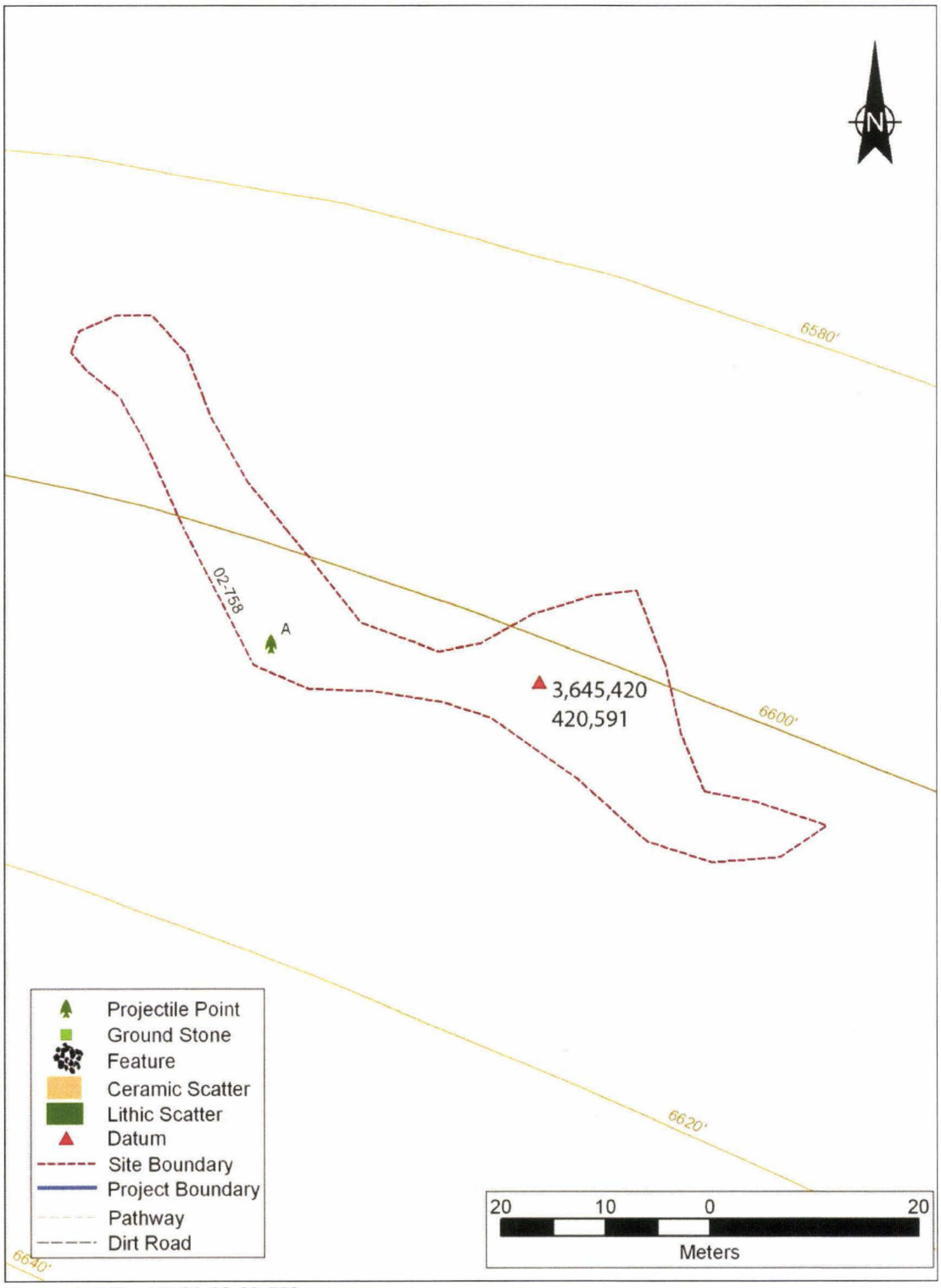

Figure A-549. AR-03-08-02-758.

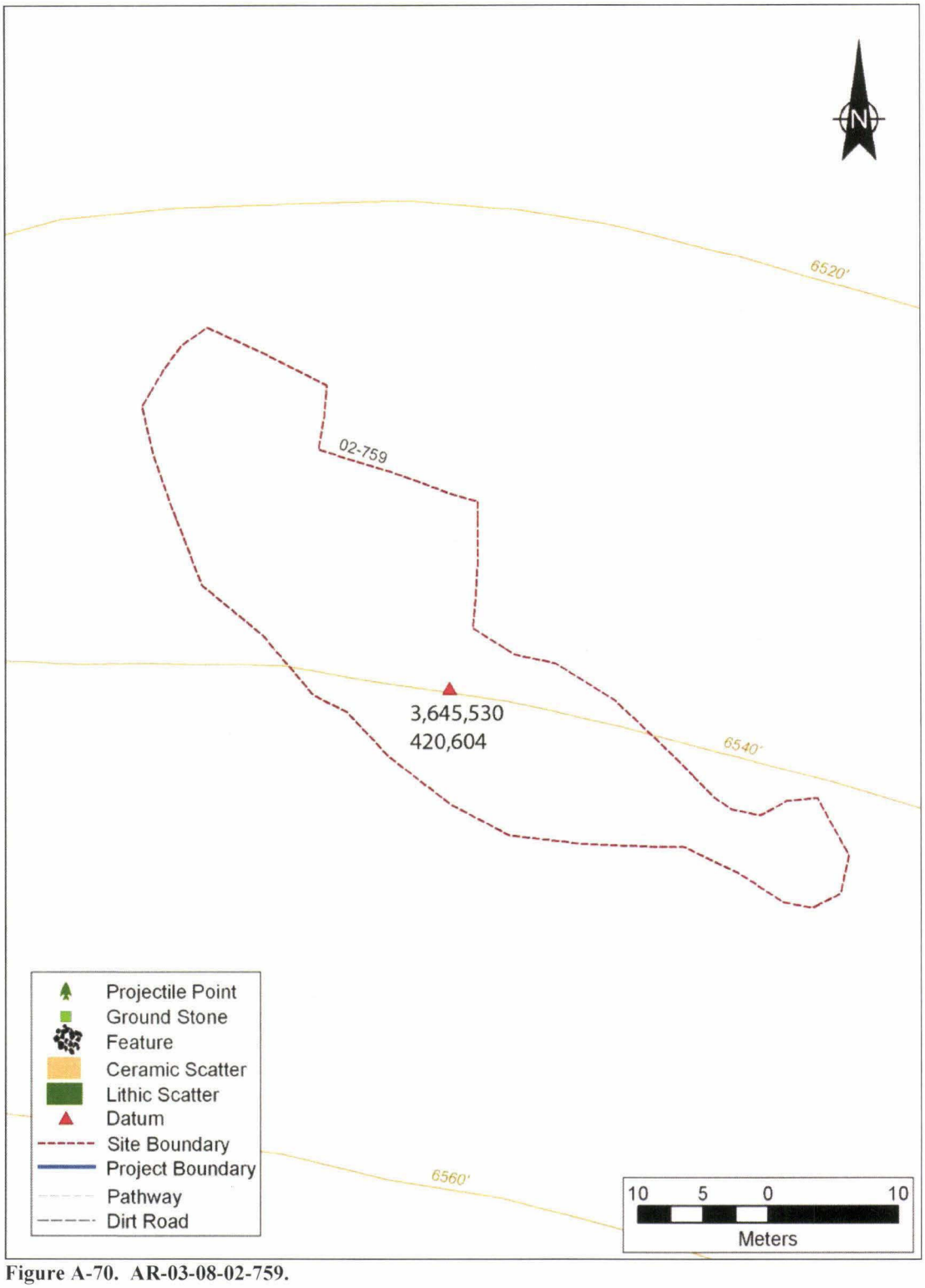

Figure A-70. AR-03-08-02-759.

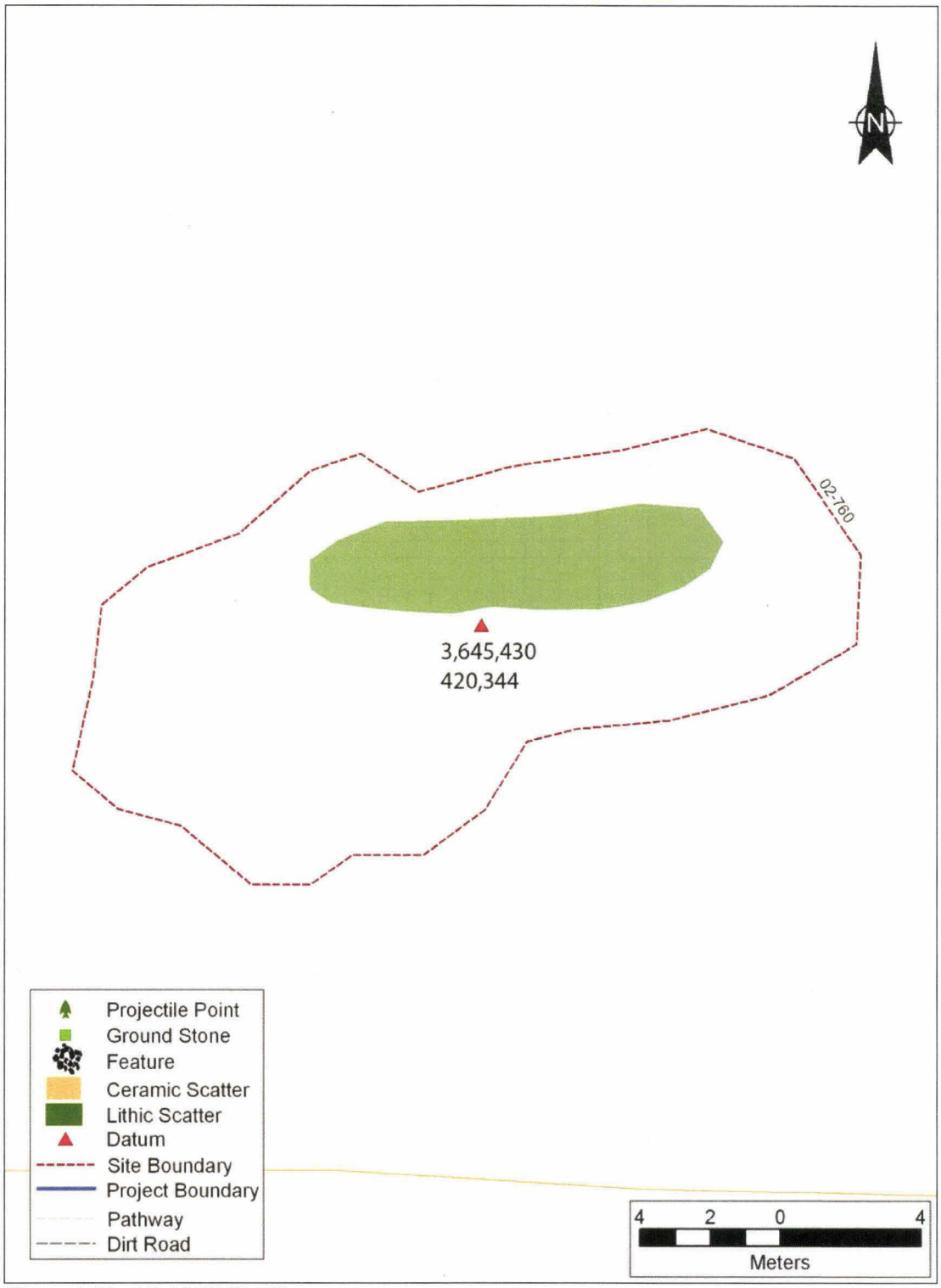

Figure A-71. AR-03-08-02-760.

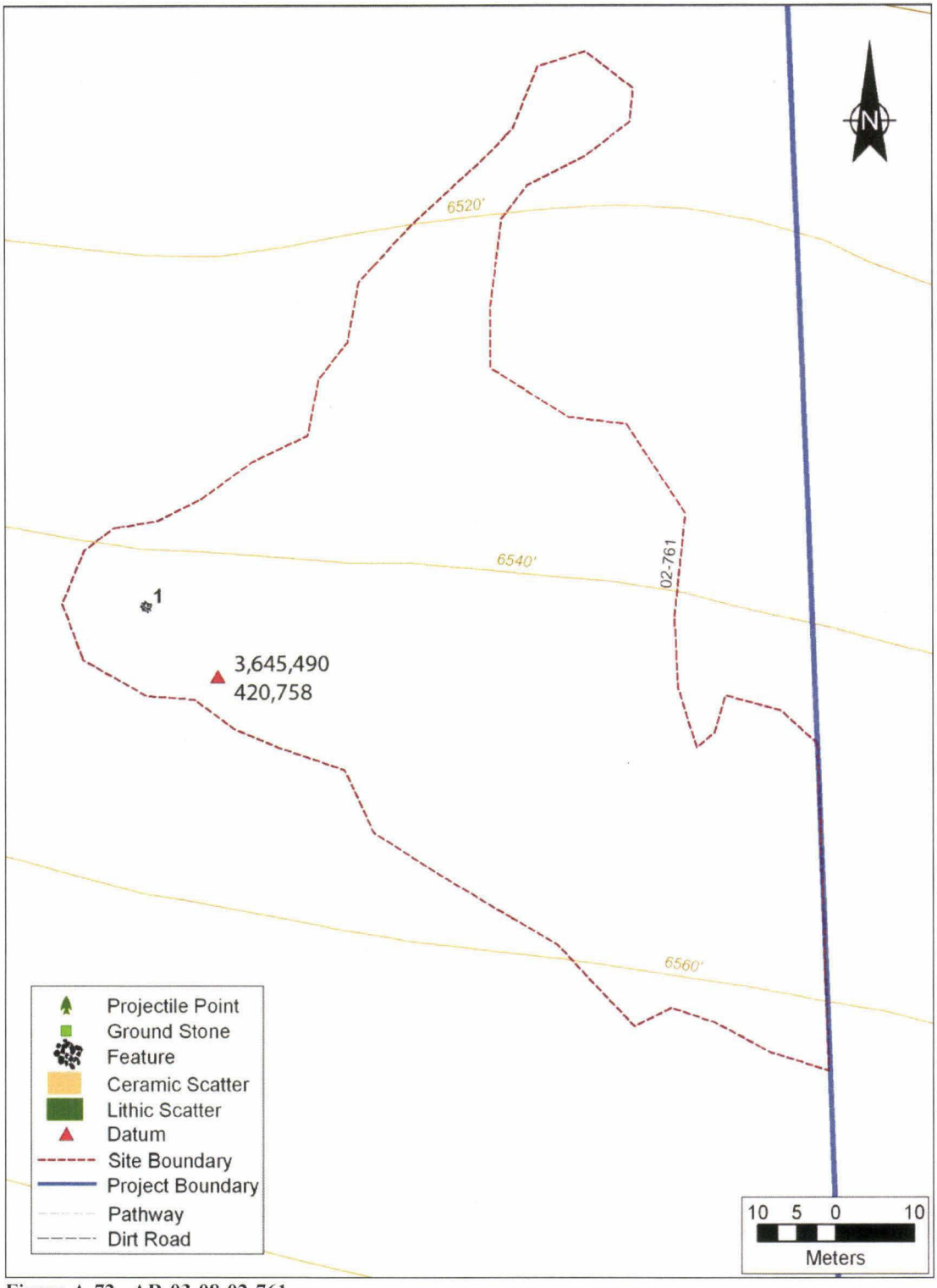

Figure A-72. AR-03-08-02-761.